Division of Public Health Systems and Workforce Development

2009 Annual Report

Centers for Disease Control and Prevention
Center for Global Health
Division of Public Health Systems and Workforce Development
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Director's Letter

Welcome to the Division of Public Health Systems and Workforce Development *2009 Annual Report*. I am pleased to once again provide you with detailed updates about our division's numerous global health activities in our fifth annual report.

Since our last report, we have been involved in a number of projects, both ongoing and new.

In 2009, the U.S. Centers for Disease Control and Prevention (CDC) went through an agency-wide reorganization that led to a restructuring of our division and resulted in a name change. Our Division of Global Public Health Capacity Development was renamed Division of Public Health Systems and Workforce Development. This organizational restructuring more accurately reflects CDC's new goal in the arena of global public health and allows us to better work with partners to strengthen capacity of countries around the world to improve their public health systems and build up their public health workforce.

Throughout these organizational changes, we remain committed to spearhead efforts to improve global health through medical technology, international coalitions, government interventions, and basic behavior changes.

Two of our long-standing programs are the Field Epidemiology Training Program (FETP) and the Field Epidemiology and Laboratory Training Program (FELTP), which are modeled after CDC's Epidemic Intelligence Service. Since 1980, these programs have been growing steadily and we have helped establish more than 30 FETPs or FELTPs that have produced more than 2,000 graduates. As of December 2009, we are supporting 12 FETPs or FELTPs, covering 23 countries, with the help of 14 resident advisors who provide direct program support on the ground. We are also in the process of establishing new programs in 7 regions, totaling 12 countries.

Another major component of our work resides in helping countries develop or strengthen the management skills of their public health leaders through targeted country management capacity building programs. We are currently leading efforts in six countries. These programs are developed by our division's Sustainable Management Development Program.

As you read our annual report, you will find more detailed information about our current and future programs and projects. For the latest updates on our activities, please visit our websites at www.cdc.gov/globalhealth/fetp and www.cdc.gov/globalhealth/smdp.

I hope you will find this report useful and informative.

Patricia M. Simone, M.D.
CAPT, U.S. Public Health Service
Director
Division of Public Health Systems and Workforce Development
Center for Global Health
Centers for Disease Control and Prevention

Division Overview

Based in Atlanta, Georgia (U.S.A.), the Division of Public Health Systems and Workforce Development is part of the Center for Global Health at the U.S. Centers for Disease Control and Prevention.

Vision
Our vision is that countries throughout the world have effective and equitable public health systems to protect communities and enable people to live healthy and productive lives.

Mission
Working with Ministries of Health (MOHs) and public health partners, we are committed to strengthening public health systems and developing the workforce using solid science and innovative programs.

We aim to build sustainable capacity that meets our partners' national priorities. We also believe that strong public health systems globally are needed to improve and protect the public's health and to respond effectively to the ever-changing and increasing global public health challenges. We are committed to effectively collaborate with our public health partners and to respect the diversity of global public health practices, resources, and experiences.

Goals
Using training programs such as the Field Epidemiology Training Program (FETP), the Field Epidemiology and Laboratory Training Program (FELTP), the Sustainable Management Development Program (SMDP), Data for Decision Making, and other programs, we help MOHs around the world build strong, effective, sustainable programs and capacity to improve public health systems on a local, regional, and national level.

Strategy
We work with partners to strengthen the global public health workforce, support public health systems, and achieve program sustainability through key strategies that emphasize applying public health science and practice and demonstrating measurable public health results. We aim to achieve these goals through:

- **Applied Epidemiology.** We work with MOHs and other public health institutions to strengthen their countries' epidemiology workforce through FETPs and FELTPs, which are residency-based programs in applied epidemiology. A combination of classroom-based instruction and mentored practical work allows residents to receive hands-on multi-disciplinary training in public health surveillance, outbreak investigation, laboratory management, program evaluation, and other aspects of epidemiology research and methods.
- **Public Health Surveillance and Response Systems.** We work with partner MOHs to strengthen their public health surveillance and response systems for priority disease conditions. FETP and FELTP residents learn detection, confirmation, reporting, analysis and feedback of disease data, and implementation of effective public health responses in a participatory approach. As graduates, they apply these skills in their work for the MOH to operate and further strengthen the public health surveillance and response systems and to use the information for more effective disease detection, control, and prevention.
- **Public Health Leadership and Management.** Through SMDP, we help countries develop sustainable public health capacity to deliver effective leadership and management development programs. Through strategic partnerships with public health training institutions, faculty development in our Management for International Public Health course, and technical program assistance, we develop leadership and management programs for public health professionals. Our approach combines experiential training and supervised applied management improvement projects to help public health professionals acquire the knowledge and skills needed to improve organizational performance, shape the public health agenda, and strengthen public health practice in their countries.

Workforce

Our teams of physicians, epidemiologists, public health advisors, management trainers, instructional designers, health educators, health communication specialists, and support staff provide scientific expertise, training consultations, and other programmatic support and advice to help MOHs enhance their health protection and health promotion programs.

For example, we develop customized classroom curricula for epidemiology, biostatistics, management, and public health communication skills. We also provide additional training and technical assistance to sustain FETPs and FELTPs, management capacity building programs, and related programs around the globe.

Partnerships

Developing partnerships is an important element of establishing, supporting, and sustaining our programs. Therefore, we regularly collaborate with national and international organizations such as the World Health Organization, the U.S. Agency of International Development, the Department of State, the Department of Defense, the Bill and Melinda Gates Foundation, the Ellison Medical Foundation, the Carter Center, and the World Bank.✦

Division-Supported FETPs and FELTPs

Brazil FETP

Program description
The Brazilian FETP was created in 2000 by the Brazilian MOH, with support from CDC. The name of Brazil's FETP is "Programa de Treinamento em Epidemiologia Aplicada aos Servicos do Sistema Unico de Saude" (EPISUS).

Since 2000, more than 180 outbreaks have been investigated and more than 80 surveillance systems evaluated. Brazilian public health authorities recognize that EPISUS has created the capacity for scientifically-based outbreak investigation and response in the country, and the program is considered a leading element of the MOH surveillance and emergency response apparatus. Furthermore, the MOH's Center for Strategic Information in Health Surveillance (CIEVS), and a national state-based network of similar centers, are staffed by EPISUS graduates, with the intention of diffusing EPISUS practices into epidemiologic practice throughout Brazil. Chronic disease surveillance is a priority for the MOH, and a leading role for EPISUS in this area—with CDC support—is being defined at this time.

The first CDC resident advisor supported the program during 2000–2006 and a Technical Advisor was hired in 2007 to continue working with the program until July 2009. Since that time, EPISUS is functioning autonomously, without a CDC advisor. In 2008, EPISUS was given official organizational recognition and transferred organizationally from the emerging infectious diseases area to CIEVS (roughly corresponding in function to the CDC DEOC) of the Secretariat of Health Surveillance (SVS). SVS's function in the MOH roughly corresponds to that of CDC. Trainees are posted throughout most of the divisions and branches of SVS.

Team members
Atlanta-based staff
- Victor Caceres, Team Lead
- Nathalie Roberts, Public Health Advisor

Brazil-based staff
- Deise Aparecida dos Santos, Program Director
- Jeremy Sobel, Resident Advisor (through July 2009)
- Wildo Araujo, Senior Staff Supervisor
- Aglaêr da Nobrega, Junior Staff Supervisor
- Dalva de Assis, Junior Staff Supervisor

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Partners
- CDC Foundation
- MOH Brazil, Secretariat of Health Surveillance
- UNDP Brazil
- WHO Global Salm Surv international network of epidemiologists and laboratorians
- World Bank

Cohort information
- Current number of trainees for cohort 9: 7
- Current number of trainees for cohort 10: 14
- Total number of graduates as of 2009: 64

Strengthened public health workforce
As of 2009, the FETP had 64 graduates: 49 (76%) work at the MOH, 7 (11%) in state health departments, 4 (7%) in municipal health departments, 2 (3%) in academia, and 2 (3%) in the private sector. In recent years, important mid-level supervisory or leadership positions have been assumed by graduates: chief of CIEVS, chief of the Transmissible Diseases Division, chief of Foodborne/Waterborne Branch, chief of the National Dengue Control Program, chief of influenza activity, chief of rabies activity, chief of yellow fever activity, and chief of rodent-associated disease activity. The man-

agement and supervision of the FETP itself are handled by graduates: the retiring director, Elizabeth David dos Santos, was replaced by another graduate (Deise Aparecida dos Santos) in 2009, and all staff supervisors are graduates. Graduates are employed at the Centers for Strategic Information of Rio de Janeiro and the states of Rondonia, Sao Paulo, and Pernambuco, and at ANVISA (the Brazilian food and drug regulatory agency). One graduate is the resident advisor to the new Angola FETP, another one is the coordinator of a new CDC-MOH collaborative pilot project on integrated zoonotic disease surveillance.

Investigations and surveillance project activities in 2009

- Number of outbreak or emergency investigations conducted and completed: 18
- Number of planned (protocol-based) studies conducted and completed: 7
- Number of surveillance evaluations conducted: 14
- Number of surveillance analyses conducted: 17

Publications

An epi bulletin exists principally for electronic posting of FETP trainee investigation and study reports. The editorial staff consists of FETP supervisors. Number of reports published on this platform in 2009: 16.

Other accomplishments

An FETP graduate working at the Brazilian food and drug regulatory administration served as instructor in a CDC short epidemiology training course in Mozambique and subsequently as a field supervisor for course graduates for 3 months.

An FETP trainee in the area of injury surveillance presented her work to counterparts at CDC; a proposal for MOH-CDC collaboration in this area is under development.

An FETP graduate served as a 1-year fellow with CDC, posted to the FETPs in Central America and the Republic of Georgia. He is now contracted by TEPHINET to develop and support RedSur, a network of the Latin American FETPs.

Status of program independence and sustainability

The program is autonomous, functioning without CDC advisor since July 2009. The Brazilian National Research Council provides a fellowship stipend to residents; the MOH pays all other associated costs, including travel, equipment, and space. The program is formally recognized within the MOH's organizational structure, located in CIEVS, the ministry's Strategic Information Center.

Monitoring and evaluation activities

An assessment of the FETP was conducted in August 2009, led by CDC Atlanta experts, as well as partners from the MOH of Colombia. The assessment was conducted with a "score-card" developed by DPHSWD and in partnership with the MOH FETP representatives to identify areas of growth and opportunity for the program.

Outcomes

Improvement in surveillance programs

Routine formal surveillance system assessments by residents of systems at the federal, state, and local level, have strengthened individual systems and fostered a culture of critical assessment and data-based improvement of surveillance.

Improved management of acute health events/emergency investigations

CIEVS, an analysis and clearinghouse of health event information for the political leadership of the MOH, is led and largely staffed by FETP graduates. It has inculcated the MOH with a culture of epidemiologic analysis and reasoning and data-based decision-making.

FETP continues to conduct outbreak investigations and is recognized by the MOH and states as a lead institution for this activity.

The state-based CIEVS network is being extended to all Brazilian states and key municipalities. These federally-supported centers are enhancing epidemiologic practice, interlinking states with MOH CIEVS, and may provide a career path for FETP graduates.

Improvement or development of public health programs
Graduates are now program managers of assorted national programs (e.g., dengue control, rabies control) and managers of assorted units such as Foodborne and Waterborne Diseases, disseminating a culture of rigorous epidemiologic practice in the MOH.

Creation or improvement in a public health policy or regulation
FETP investigations, surveillance system evaluations, and applied research projects routinely inform MOH policy. Policy proposals are often developed by graduates who are managers or senior technical staff at the MOH. For example, a meningitis outbreak investigation, resulting in the largest emergency meningitis vaccination campaign, likely influenced the early introduction of Mening C vaccine into the routine childhood vaccination calendar. An investigation of risk factors for death among H1N1 patients informed national treatment and vaccination guidelines. An investigation of a unique cause of yellow fever transmission by breast milk lead to ongoing reconsideration of yellow fever vaccination recommendations.✦

Central America FETP

Program description
The Central America FETP (CA FETP) started in 2000 as part of the post-Mitch/George Hurricanes reconstruction project for Central America. It was initially supported by USAID funds and most recently by CDC's Global Disease Detection (GDD) initiative.

CA FETP is a regional program of five national FETPs representing Costa Rica, the Dominican Republic, El Salvador, Guatemala, and Honduras. The program is also launching FETP initiatives in Panama and Belize. CA FETP is unique in that it was initiated with a regional vision.

The goals of the CA FETP are to build institutional capacity within each country for epidemiologic assessment, investigation, and surveillance and to foster a scientific, data-based approach for implementing effective public health programs and policies.

The CA FETP has designed and implemented a pyramidal three-tiered FETP that has been cited as a successful model for FETPs in the global network. This model aims to build an effective career track and surveillance network for epidemiologists. The three tiers are

1. **Basic Level Training:** For local health staff, it consists of about 88 classroom hours interspersed throughout 3 to 5 months field assignments
2. **Intermediate Level Training:** For mid-level district epidemiologists, it consists of 264 classroom hours interspersed throughout 9 months of field assignments
3. **Advanced Level Training:** Known as the advanced FETP with a national focus for advanced epidemiologists, it consists of 384 classroom hours interspersed throughout 24 months of field assignments

This tiered approach lets residents establish a foundation of epidemiology skills that can be built upon as they graduate through higher levels of the training model. This model also creates a mentorship "cascade" with advanced-level residents serving as mentors to intermediate-level residents who in turn mentor basic-level residents.

The program measures long-term success by the attainment of self-sustaining national FETPs that produce high-quality graduates who become agents of change within their public health systems. The CA FETP has become an interdependent network of national FETP initiatives with countries at various stages of implementation of the multi-tiered training. Costa Rica has emerged as an institutionalized, sustainable national FETP; other countries are implementing basic and intermediate level tiers.

Academic accreditation is provided by the University del Valle (UVG) in Guatemala City, physical site of CDC's Central America and Panama (CAP) office. The focus of the CA FETP has been to develop an academic and political/leadership infrastructure to strengthen national programs, curriculum materials with future Web-based delivery options (with assistance from the University of North Carolina, Chapel Hill), and leadership within the Regional Technical Committee, the group of national epidemiology directors and FETP coordinators that form the steering body of the CA FETP.

Guatemala-based CDC CA FETP field staff are heavily integrated into GDD center activities, staffing the Emergency Operations Center on a rotating basis and providing direct technical assistance to the Guatemalan MOH in various areas (e.g., injury surveillance, pandemic influenza response, all hazards-related activities).

Team members
Atlanta-based staff
- Victor Caceres, Team Lead
- Senia Espinosa, Health Education Specialist
- Denise Traicoff, Health Education Specialist

Guatemala-based staff
- Anaite Diaz, Resident Advisor

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- Augusto Lopez, Resident Advisor
- Gloria Suarez, Resident Advisor
- Gabriela Illescas, Administrative Assistant

Partners

- CDC partners: CAP, GDD, Avian Influenza Program, International Emerging Infections Program, and other Atlanta-based centers
- Pan American Health Organization
- Regional Technical Committee
- Universidad Catolica, Tegucigalpa, Honduras
- Universidad Evangelica, San Salvador, Costa Rica
- Universidad Nacional Autonoma, San Juan, Costa Rica
- University del Valle de Guatemala, Guatemala City
- University of North Carolina, Chapel Hill
- Institute Carlos III, Madrid Spain

Cohort information

- Current number of trainees for cohort 6: 18
- Total number of graduates as of 2009: 67

Strengthened public health workforce

Examples of major leadership positions that have been held by FETP graduates:

- **Guatemala:** National Director of Epidemiology, National Director of Surveillance
- **Honduras:** National Director of Epidemiology, Executive Secretary for Family Health and Maternal Mortality Reduction
- **El Salvador:** National Director of Epidemiology, National Director of Surveillance
- **Costa Rica:** National Director of Epidemiology, National Director of Surveillance
- **Dominican Republic:** National Director of Epidemiology, National Director of TB Program, National Director for Chronic Disease Program
- All the national coordinators of programs in the region are FETP graduates

*Present positions of advanced-tier FETP graduates (Cohorts 1-4) in Central America, n=67**

Country	MOH			Other Institutions**	International health-related organizations	Retired	Total
	Epidemiology Office	Other MOH Programs	Local and District	—	—	—	—
Costa Rica***	5	4	7	—	—		16
El Salvador	5		1	—	2	1	9
Guatemala	2	0	4	5	0	1	12
Honduras	3	2	4		0		9
Nicaragua±	3		3	1	1	1	9
Dominican Rep	4	3	3	1	—	—	11
Panama					1	—	1
Total	**24**	**7**	**22**	**7**	**4**	**3**	**67**
%	36	10	33	10	6	5	100

*Data current as of December 2009.
**Other institutions include other governmental or non-governmental institutions, such as universities.
*** Includes the nine graduates from the 1st cohort on the national program
± Info updated as of December 2007 (Nicaragua is not currently active in CA FETP)

Graduates by level and country (2001–2009)

Country	Basic	Intermediate	Advanced
Guatemala	946	154	12
Honduras	228	26	9
El Salvador	201	169	9
Costa Rica	595	104	16
Nicaragua	n/a	80	9 (Not currently participating)
Dominican Republic	39	28	11
Total	**2009**	**581**	**67**

Investigations and surveillance project activities in 2009

- Number of outbreak or emergency investigations conducted and completed: 29
  - 15 conducted by residents of the 6th regional cohort
  - 10 conducted by residents of the 5th regional cohort
  - The FETP/CAP staff, in collaboration with UVG, participated in four outbreak investigations as part of GDD activities
- Number of planned (protocol-based) studies conducted and completed: 3
  - Seroprevalence of rubella in San Vicente, El Salvador, February 2009; Jose Claros, FETP 5th cohort
  - Morbidity in shelters after the Chinchona Earthquake in Costa Rica, January 2009. Karla Carbajal, FETP 5th cohort
  - Prevalence of physical activity among adult population living in Puerta Del Señor, Fraijanes Municipality. Guatemala, March 2009. FETP 6th cohort group activity
- Number of surveillance analyses conducted: 18, all conducted by FETPs of the 6th cohort
- Number of surveillance evaluations conducted: 18, all conducted by FETPs of the 6th cohort

Other projects or programs conducted in 2009

The CA FETP received official requests from the MOHs of Belize and Panama to start the program in those countries. The initial assessment visit was conducted in Panama in February 2009 and in Belize in November 2009. The CA FETP hosted Jonas Brant, DVM, a CDC fellow and graduate of the Brazil FETP, to work on developing training modules for veterinarians.

Training

Training type/title	Audience	Length (hours)	Number trained	Key outcomes or comments
Scientific writing and public health communication workshop; 6th Technical Conference AMNET, Argentina, November	Healthcare professionals working in chronic disease-related topics	5	18	Students received guidelines on how to write a scientific manuscript and give an oral presentation
Diagnosis of the FETP capacity; 6th Scientific Conference of the Americas, Costa Rica, December	Coordinators of the FETP in Central and South America and DR	4	20	Revision of the "scorecard" for the improvement of this assessment tool
Helmet and reflective vest use (workshop), Guatemala, June	Guatemala city transit police staff	8	61	Increased awareness of new laws regarding use of protective equipment
Experiences in injury surveillance, control and prevention in Columbia and Central America (lecture), Guatemala, November	Personnel from MOH, Ministry of Education and Internal Security, NGOs working in violence prevention in Guatemala	2	20	Promote injury surveillance in Guatemala
Epidemiology of intentional injuries (workshop), Honduras, May	Epidemiologists from the Honduras MOH	8	10	Increase awareness of violence prevention and control measures

Cohort and case control studies design (lecture), GO Guatemalan Conference, Guatemala, August	Gynecologists	2	50	Develop interest among gynecologist to conduct epidemiologic studies

Other accomplishments

- Completed the development and piloting of the comprehensive advanced level FETP curriculum for the advanced level regional CA FETP
- Completed the materials for the standardized basic level curriculum for the CA FETP; piloting of these materials will be conducted in 2010
- A series of distance-based training modules for tutors and advanced FETP residents were piloted; the sessions focused on competencies related to the guidelines and evaluation of trainee products and training in the use of SAKAI, the training platform that UVG uses
- CDC-Atlanta and CAP FETP staff participated in international assessments of FETP in South America including Peru, Columbia, and Brazil; the CA FETP has been increasingly engaged in helping to strengthen an emerging network of FETP in South America know as RedSur

Status of program independence and sustainability

To date, the Costa Rica FETP is the first national program to reach full sustainability, graduating its 1st cohort (nine residents) using national resources in 2008. Costa Rica currently has an active cohort of 10 residents. Costa Rica also started a basic level in 2009 and is planning to initiate the intermediate level in 2010. Honduras and El Salvador have active basic and intermediate FETP initiatives, but both face funding challenges in 2010. The Dominican Republic is in the process of initiating a basic level FETP in 2010.

The regional advanced level CA FETP continues to be largely supported by CDC, but responsibility for day-to-day planning and implementation of training modules has been turned over to UVG staff.

Monitoring and evaluation activities

- Assessment using "scorecard" is planned for the Costa Rica FETP in 2010
- Training modules for tutors and residents have standardized evaluation procedures

Outcomes

After an investigation of an outbreak of human and animal rabies in a community of San Cristobal, Dominican Republic, the MOH changed the vaccine and treatment protocol to be used in persons attacked by rabid animals. The investigation showed that the vaccine in use did not have the required potency (by PAHO guidelines) and had caused a serious side effect (Guillan-Barre) in two of the three persons who received it. All the population of cats and dogs in the community were vaccinated, and there were no more cases of animal or human rabies.

As a result of an investigation of an FETP from the 6th cohort, an outbreak of leptospirosis in the rural community of El Salado-Galván-Baoruco was confirmed. The investigation determined the extent and mode of transmission of the outbreak. Five serovars of leptospirosis were identified in 16 of 34 suspected cases. The same serovars found in human cases were also present in goats, dogs, and pigs samples. The investigation found that the outbreak was due to bathing practices in the canal, which had been contaminated by animal feces due to heavy rains in the weeks prior to the outbreak. The incidence of leptospirosis went to zero after banning access to the canal, administering of chemoprophylaxis, and educating the villagers on disease prevention.

Costa Rica

- Graduated 37 health professionals from the basic level who reside in seven of the country's regions; financial support was secured for the intermediate level in 2010
- Established a protocol for surveillance in shelters following outbreaks of diarrhea and respiratory disease in these locations
- Responded to an outbreak of a highly-virulent type of *clostridium difficile,* resulting in the implementation of a surveillance system for detecting these genotypes
- Hosted the Americas Regional TEPHINET Scientific Meeting in December 2009
- A poster submitted by an FETP trainee to the Americas Conference on Chronic Disease (AMNET)

won 1st place in November 2009

Dominican Republic
- Implemented the basic level in two regions using the standardized curriculum of the CA FETP; 38 health professionals were trained
- Investigated outbreaks related to leptospirosis, H1N1 influenza, rabies, malaria, dengue fever, and foodborne illnesses
- Evaluated several surveillance systems, including those related to acute respiratory disease, diarrhea, and foodborne illnesses

El Salvador
- Investigated outbreaks related to foodborne illnesses in two government institutions
- Conducted surveillance system evaluations related to acute respiratory infection, pertussis-like syndrome, and pneumonia mortality
- Designed a national system for nutrition surveillance
- Investigated the first 10 reported cases of H1N1 influenza and documented its natural history, implemented training for clinicians in treatment protocols, and identified family and community interventions
- Developed community surveillance for H1N1 clusters using school absenteeism reports

Guatemala
- The MOH provided financial support for all three training tiers
- Investigated outbreaks of varicella, dengue fever, hospital-acquired infections, H1N1 influenza, and malaria
- Evaluated surveillance systems for pneumonia, malaria, and dengue fever

Honduras
- 29 residents from 8 regions finished all 9 modules of the intermediate level and are scheduled to graduate in early 2010
- Evaluated surveillance systems related to rotavirus and to pneumonia in children <5 years old
- Trainees of the intermediate level investigated 28 outbreaks
- An intermediate level trainee won 1st place award for an oral presentation given at the Americas Regional TEPHINET Scientific Meeting in December 2009
- An advanced level FETP trainee won 1st place for the best investigation published in the *Journal of the Medical College of Honduras*

Panama
- Conducted investigations of hantavirus, dengue fever, H1N1 influenza, and leptospirosis
- Participated in PAHO assessments of capacities related to the implementation of International Health Regulation requirements
- Implemented the first training of tutors course for the basic level FETP✦

Central Asia FETP

Program description
In 2003, the Central Asia Regional FETP (CAR FETP) was established with the MOHs from five Central Asian republics (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), CDC, and USAID. The program is headquartered in Almaty, Kazakhstan.

Although USAID no longer supports the program, the Department of Defense's Defense Threat Reduction Agency (DOD/DTRA), through the Biological Threat Reduction Program (BTRP), has supported activities in Kazakhstan and Uzbekistan, and CDC's Global Disease Detection (GDD) supports CAR FETP with Kazakhstan as a GDD Regional Center.

Seven cohorts have been recruited with 40 having completed training and 21 currently in training. Since its inception, the program has conducted 99 outbreak investigations and 40 surveillance evaluations, and completed 28 research studies. The CAR FETP is recognized by the MOHs as a venue for training the next generation of public health leaders in Central Asia.

Team members
Atlanta-based staff
- Russell Gerber, Team Lead
- Hiari Imara, Public Health Advisor

Kazakhstan-based staff
- Simon Ajeilat, Resident Advisor
- Dilyara Nabirova, FETP Manager

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Partners
- CDC partners: National Center for Influenza and Respiratory Diseases, GDD
- Asian Development Bank
- DOD/DTRA
- Kazakhstan MOH and Republican Sanitary Epidemiological Services (SES)
- Kyrgyzstan MOH and Republican SES
- Tajikistan MOH and Republican SES
- Turkmenistan MOH and Republican SES
- Uzbekistan MOH and Republican SES

Cohort information
- Current number of trainees for cohort 6: 7
- Current number of trainees for cohort 7: 12
- Total number of graduates as of 2009: 40

Strengthened public health workforce
In 2009, the program had 21 residents. There are 40 graduates, 36 of whom work in MOHs. To date, 90% of the graduates are still working in their government health system; several are in high-level positions in the MOH where they can influence the way public health is practiced throughout their country.

Kazakhstan
- Three of the five epidemiologists working for the National (Republican) Surveillance Department are FETP graduates; one of them is the head of that department
- Two graduates are heads of regional and district surveillance departments
- An FETP graduate is the National TB coordinator, another one is working at the Republican AIDS Center as a coordinator of the Regional Training Program on HIV Surveillance

Tajikistan
- There is no postgraduate institution for public health and the FETP is the only venue for continued education for public health officers

- One FETP graduate is the Deputy Minister of Health, another is a Deputy Director of the Tajik Republican Sanitary Epidemiologic Station

Uzbekistan
A graduate is head of an oblast Sanitary Epidemiologic Station, another is head of the Infection Control Department in the MOH

Kyrgyzstan
A graduate is the head of the Regional Surveillance Department

Turkmenistan
A trainee is the head of the National Department for Surveillance and Parasitic Diseases at the MOH headquarters

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 18
- Number of planned (protocol-based) studies conducted and completed: 6
- Number of surveillance evaluations conducted: 9
- Number of surveillance analyses conducted: 3

Other projects or programs conducted in 2009
Kazakhstan
- Nosocomial outbreak of Crimean-Congo Hemorrhagic Fever (CCHF) in a Hospital, Turkistan City, July 2009
- CCHF outbreak investigation in Kzyl-orda region, April 2009
- Botulism outbreak in Uzun-Agash, January 2009
- Botulism outbreak in Southern Kazakhstan, January 2009
- Reproductive age mortality study of maternal mortality and risk factors associated with it, Southern Kazakhstan
- Factors associated with delay in attendance for medical care among newly diagnosed TB patients, Almaty region
- Case-control study on determinants of trauma in children under 2 years of age, Auezov District, Almaty

Uzbekistan
- Protection afforded by anthrax vaccination to residents in anthrax-endemic areas
- Investigation of the prevalence and factors associated with the duration of breast feeding in children under 1 year of age, Tashkent
- Determinants of increased intracranial pressure in children, Tashkent

Kyrgyzstan
- Outbreak of cutaneous anthrax, Kushtuba District, July–August 2009
- Anthrax outbreak investigation, Jalalabad region, August 2009

Tajikistan
- Risk factors for hepatitis A among children < 5 years of age, Isfara District, October 2009
- CCHF case series, Dushanbe region, August 2009
- CCHF outbreak in Tursunzade District, August 2009
- TB treatment outcome among newly diagnosed pulmonary TB patients, Dushanbe

Other accomplishments
- Initiated plans to include a veterinary track in the FETP curriculum
- Held meetings with Ministry of Agriculture top officials in Tajikistan and Kyrgyzstan

Status of program independence and sustainability
Several graduates are in high-level positions in the MOHs where they can have influence the way public health is practiced throughout their country. When asked for examples of how the FETP has contributed to the improvement of public health in their countries, the directors of the Republi-

can Sanitary Epidemiological Stations in Kazakhstan, Kyrgyzstan, and Tajikistan submitted letters expressing their gratitude and deep appreciation for the significant contributions of the FETP.

They specifically appreciated the epidemiological skills of the residents and graduates who can provide sound scientific evidence to guide public health decision-making; the active participation of residents in the investigation of serious public health problems, some of which have the potential for regional and global consequences; FETP graduates' active participation in reforming public health policies and training other public health officers within the MOH; and communication of scientifically-based data and information through reports, presentations, and publications, nationally and internationally.

Successful graduation from the FETP is regarded as one of the terms that satisfy the Uzbek MOH requirements to grant epidemiologists job grade promotion. The same is expected to happen with the FETP graduates in Kazakhstan beginning in June 2010.

Monitoring and evaluation activities

- Regular evaluation of knowledge acquired after each training course
- Biweekly reports from residents on field assignments (data analysis, protocols of planned studies, and evaluation of surveillance systems)
- Weekly/biweekly feedback by e-mail or phone
- Daily communication with residents during outbreak investigations

Outcomes

- The HIV study in Osh resulted in a more focused attention of the MOH in Kyrgyzstan on HIV nosocomial transmission of the infection in healthcare facilities. The Global Fund gave the MOH resources to acquire disposable syringes and other equipment. To improve sensitivity of the system, surveillance activities were intensified in the southern part of the country among children and pregnant women.
- The outbreak investigations of foodborne illnesses among company workers in Western Kazakhstan highlighted the need for more intensive and regular inspection of food facilities in the area
- The results of the study on the possibility of circulation of pathogens that were never considered in the past in Tajikistan (West Nile, Q Fever) were communicated to the MOH
- Upon request by public health officials in Kazakhstan, residents are developing epidemic thresholds for certain diseases that will be used for detection of outbreaks✦

China FETP

Program description
The China FETP (C-FETP) was started in 2001 by China CDC. Since then, C-FETP officers and staff have played major roles in China's surveillance, epidemiologic investigation, and response activities. Over the past 6 years, C-FETP has conducted about 50 investigations per year on a wide range of public-health problems, including SARS in 2003, avian influenza, paraplegia from contaminated methotrexate, severe enterovirus 71, melamine contamination of infant formula, the 2008 Sichuan earthquake, the 2008 central China cold weather disaster, and other public health emergencies of national concern.

In 2006, C-FETP became a permanent part of the China CDC, Office of Epidemiology. With the emergence of avian influenza worldwide, China CDC has tasked C-FETP to lead the agency's surveillance, epidemiology, and response activities for the disease nationwide. For their 2 years of training through service, C-FETP officers are assigned to either the China CDC in Beijing, or to field sites within China's 31 provinces and administrative regions. When the program began in 2001, there were no field training bases outside of Beijing; since then, the C-FETP has expanded to 17 field training bases with several more in development.

Team members
Atlanta-based staff
- Ronald Moolenaar, Team Lead
- Nathalie Roberts, Public Health Advisor

China-based staff
- Robert Fontaine, Resident Advisor
- Bao-Ping Zhu, Medical Epidemiologist
- Zhang Rui (Ivy), Office Management Specialist

Contact information
China FETP
Chinese Center for Disease Control and Prevention
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China 100050

Partners
- CDC partners: Influenza Division, International Emerging Infections Program, Coordinating Office for Terrorism Preparedness and Response
- China CDC, including 17 provincial field bases (Shandong Province, Anhui Province, Jiangsu Province, Henan Province, Fujian Province, Guangdong Province, Zhejiang Province, Sichuan Province, Shenzhen City, Chongqing, Shanghai, Bao'An District, Chaoyang District, Ningbo city, Jiangxi Province [Suzhou city], Xiamen city)
- WHO

Cohort information
- Current number of trainees for cohort 8: 17
- Current number of trainees for cohort 9: 14
- Total number of graduates as of 2009: 80

Strengthened public health workforce
Position of graduates in health system as of December 31, 2009: 5 graduates hold positions as C-FETP staff for the national level; 68 are mentors at field bases.

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 54
- Number of planned (protocol-based) studies conducted and completed: 22
- Number of surveillance evaluations conducted: 1
- Number of surveillance analyses conducted: 22

Other projects or programs conducted in 2009
- Enterovirus 71 comprehensive investigation
- Melamine-contaminated milk investigation

- Yunnan sudden death study
- Evaluation on the public health emergency response during the Sichuan earthquake
- US CDC hosted a high-level Shangai CDC visit in September 2009
- Consultation to Shangai CDC for start up of a new Shangai FETP

Training

Training type/title	Training topic	Length	Number trained
Wimba Online course; taught 8 different times through the year	▪ Epi/Lab ▪ Rapid Response ▪ General preparedness/All Hazards ▪ IHR ▪ Global Salm Surv ▪ Health Comm/Risk Comm ▪ HFMD Outbreak Investigations	1 day	224
4th C-FETP annual conference	▪ Epi/Lab ▪ Rapid Response ▪ General preparedness/All Hazards ▪ IHR ▪ Global Salm Surv ▪ Health Comm/Risk Comm ▪ Writing Scientific Papers	3 days	325
Mentor Workshop	▪ Epi/Lab ▪ Rapid Response ▪ General preparedness/All Hazards ▪ IHR ▪ Global Salm Surv ▪ Health Comm/Risk Comm ▪ Writing Scientific Papers	2 days	84

Status of program independence and sustainability

In addition to five graduates working as trainers and mentors for many years, another upcoming graduate will be recruited as mentor.

Monitoring and evaluation activities

- Weekly report required of residents
- Weekly review routine meeting among staff
- Products review by each field base in mentor workshop: field reports, investigations, papers, abstracts, presentations
- Database update weekly: Epi-Info database similar to Epi-Track
- Calibrated peer review

Outcomes

- Improved surveillance programs
- Improved management of acute health events and emergency investigations
- Improvement of development of public health programs
- Creation or improvement in a public health policy or regulation
- Agreement of intent signed with Shangai CDC for new Field Epidemiology Center and FETP
- Completed investigation of H1N1 pandemic influenza in a tour group suggesting lack of airborne transmission and implying droplet or fomite transmission instead
- Two publications of completed outbreak investigations by C-FETP officers in peer-reviewed journals
- Epidemiologic investigation documents outpatient steroid injections for fever case was a cause of increased severity of viral illness (Sv-71)
- Expansion to 17 training bases for C-FETP officers
- Best poster award, 2009 EIS International Night, Atlanta, GA✦

Ethiopia FELTP

Program description
The Ethiopia FELTP (EFELTP) is a competency-based training and service program in applied epidemiology and public health. It is co-sponsored by the Federal MOH, the Addis Ababa University School of Public Health (AAU SPH), the Ethiopian Public Health Association, and CDC. Program participants will receive a Master of Public Health (MPH) in field epidemiology from AAU SPH upon successful completion of program requirements.

The program is dedicated, through a combination of 25% classroom learning and 75% on-the-job training and service, to applied, field-oriented, public health practice. The goal of this program is to build public health capacity and improve the health of Ethiopia's population by producing a highly trained cadre of public health epidemiologists who will work on priority issues in the country, strengthen the public health system, and enhance human resource infrastructure while providing essential public health expertise and service to their hosting health unit.

Team members
Atlanta-based staff
- Donna Jones, Team Lead
- Michele Evering-Watley, Instructional Designer
- Ken Johnson, Public Health Advisor
- Italia Rolle, Epidemiologist

Ethiopia-based staff
- Adamu Addissie, Academic Coordinator
- Zegaye Hailemariam, Project Coordinator
- Daddi Jima, Deputy Director, EHNRI and EFELTP Program Director
- Richard Luce, Resident Advisor

Contact information
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Partners
- CDC partners: CDC Ethiopia
- AAU SPH
- Ethiopia Public Health Association
- Ethiopia MOH, Ethiopian Health and Nutrition Research Institute

Cohort information
- Current number of trainees for cohort 1: 13

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 15
- Number of planned (protocol-based) studies conducted and completed: 2
- Number of surveillance evaluations conducted: 2
- Number of surveillance analyses conducted: 13

Status of program independence and sustainability
- Program/curriculum accepted for degree granting by AAU SPH
- Program placed in the Public Health Emergency Management unit with unit director as EFELTP Program Director
- Program coordinator hired and in place
- Steering committee established and functional
- Draft MOU for all parties ready for signatures
- Program is recognized and supported by the MOH. AAU SPH has shown commitment to the program and has taken ownership by approving the curriculum to grant an MPH in Field Epidemiology. They have dedicated classroom, computer lab, and library space to the program. The budget is small compared with other FELTPs and is not dependent on high levels of funding.

Outcomes

Improvement in surveillance programs

EFELTP participated in an MOH National Surveillance and Emergency Response Planning meeting and took a leading role in revising and updating the list of nationally notifiable diseases, revising case definitions, reporting guidelines and forms (December 2009).

Improved management of acute health events/emergency investigations

EFELTP conducted case investigations and contact tracing in response to the introduction of H1N1 in the country, staffed, and managed the H1N1 quarantine facility at the international airport, served on the National H1N1 Response Committee as the primary H1N1 MOH coordinator across government agencies, and liaised with hospitals and AFRO/WHO, prepared daily H1N1 situation updates for MOH and the Health Minister (June 2009). Resident recommendations to improve acute watery diarrhea preparedness by constructing latrines and provision of safe water at large religious and cultural gatherings were adopted and implement by the Oromia Regional Health Bureau.

Improvement or development of public health programs and creation or improvement in a public health policy or regulation

EFELTP investigation documented low safety belt usage, presented results to Traffic Safety authorities and a Mandatory Safety Belt law was adopted at a national public health meeting held in Addis Ababa (December 2009).

Other projects

Leadership in Strategic Information (LSI)

LSI is a year-long in-service training that emphasizes learning the skills needed to make programmatic decisions based on current data. The target audience for LSI is health professionals that are currently working in HIV/AIDS.

At total of 13 people are being trained in the second cohort. Three modules are completed, the last module was completed in August 2009; 10 people completed the third module.

Mortality Surveillance Activity

Technical assistance to the Addis Ababa Mortality Surveillance Program and the Ethiopian Network of Demographic Sites continues mainly via e-mail and calls. The funding restriction by GAP has been lifted and these programs can focus on all causes of mortality in addition to HIV/AIDS.

For more information on Ethiopia country activities, see the Ethiopia section under "Management Capacity Building Activities."✦

India FETP

NEW DELHI FETP

Program description

The India FETP in New Delhi was started in 2006 as a degree-granting program, offering an MPH in Field Epidemiology. This program is within the framework of the MOH, in the National Centers for Disease Control (NCDC). It takes in recent graduates with the MBBS degree, typically in their late 20s and from the central and northern region of India, and provides them with a 2-year training program and a Master degree. Non-medical trainees are also accepted in the program (e.g., laboratory specialists, engineers in biotechnology). Originally, the program was structured more like an MPH program than a classic "training through service" FETP. However, a curriculum revision process in 2008 led to changes that will create a hybrid between a full FETP and an MPH.

In 2009, India was chosen as a Global Disease Detection Center. Under this new designation, the Indian MOH committed to developing a new Indian EIS program. This would be the same as a traditional FETP with state-level officers receiving "in-service training" and conducting outbreak investigations. Currently, the Indian government is working with CDC to sign an umbrella MOU that will encompass this new program and public health capacity-building activities.

Team members

Atlanta-based staff

- Ronald Moolenaar, Team Lead
- Nabil Ahmed, Public Health Advisor
- Senia Espinosa, Instructional Designer

India-based staff

Currently, this position is vacant, however interviews have been conducted and a resident advisor is expected to be assigned by fiscal year 2011.

Contact information

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Partners

- Indian Council of Medical Research, NIE, Chennai
- NCDC, New Delhi
- U.S. Embassy New Delhi, Science Section
- WHO India and WHO South East Asia Regional Office (SEARO), New Delhi

Training

Training type/title	Audience	Length	Key outcomes or comments
Basic field epidemiology	District level epidemiologists	2 weeks	Provided a strong base for basic epidemiology principles
Developed with BJ Medical College, Ahmedabad, to engage programs of MD community medicine into FETP methods, particularly outbreak investigations	Community Medicine programs	1 week	Allow community medicine medical professionals to better understand the FETP
Training-of-the-trainers course for scientific writing conducted at the regional level	Trainers of the FETP	1 week	Provided a base for writing and publishing scientific papers for trainers of FETP cohorts
Two training-of-the-trainers courses completed for FETP graduates	FETP graduates	1 week	Allowed FETP graduates to gain training skills in hopes that they would be able to mentor current cohorts

Future plans

- Hire and place an RA
- Start new Indian EIS
- Maintain the Chennai FETP

CHENNAI FETP

Program description

The India FETP in Chennai is a collaboration between the National Institute of Epidemiology (NIE), Chennai (A branch of the Indian Council for Medical Research, India), WHO India country office, and CDC. With assistance from CDC and WHO, the NIE developed and revised a curriculum for a 2-year Master of Applied Epidemiology program and established necessary academic linkages. The first class was enrolled in January 2001 and currently they are training the ninth cohort of 14 trainees.

The program has matured over the last eight years of operation and the activities (e.g., recruitment of trainees, presentations, partnerships) are well organized. Much progress has been made these recent years in terms of building partnerships with public health and academic institutes that are involved in epidemiology training in India. CDC provided critical technical assistance to the India FETP faculty in setting up these networking and advocacy workshops.

Team members

Atlanta-based staff

- Ronald Moolenaar, Team Lead
- Nabil Ahmed, Public Health Advisor

India-based staff

- Dr Kumaraswami, NIE Director
- Dr M.V. Murhekar, MAE Coordinator

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India

Partners

- Indian Council for Medical Research (ICMR)
- National Institute for Epidemiology (NIE)
- Several State Health Departments in India
- U.S. Embassy New Delhi, Science Section
- WHO India and WHO South East Asia Regional Office, New Delhi

Cohort information

- Current number of trainees for cohort 8: 19
- Current number of trainees for cohort 9: 14
- Total number of graduates as of 2009: 68

Training

Training type/title	Audience	Numbers trained	Length	Key outcomes or comments
Methods in epidemiologic, clinical, and operations research	Physicians and public health professionals	23	5 days	▪ Workshop was jointly organized by the American Thoracic Society and NIE ▪ 7 research proposals developed during the workshop
Capacity building workshop on Operations Research in HIV/AIDS: focusing research methodology	Young researchers from the Network of Indian Institutions working in HIV/AIDS Research)	5 days	27	▪ Oriented the young researchers from NIIHAR institutes in research methodology ▪ Five concept papers based on operationally relevant problem in HIV/AIDS prepared.

Investigations and surveillance project activities in 2009

- Number of outbreak or emergency investigations conducted and completed: 25
- Number of planned (protocol-based) studies conducted and completed: 19
- Number of surveillance evaluations conducted: 19
- Number of surveillance analyses conducted: 19

Status of program independence and sustainability

- Public health and epidemiology training is one of the main mandates of the NIE
- The training course is funded through the ICMR, Ministry of Health and Family Welfare
- Entire teaching and the field supervision of the trainees is conducted by faculty of NIE✦

Kenya FELTP (includes South Sudan)

KENYA FELTP

Program description

The Kenya FELTP was established in 2004. It is designed to strengthen the epidemiologic and laboratory management capacity of Kenya and the East Africa region to meet the challenges of emerging infectious diseases and other public health problems. The FELTP uses CDC's existing infrastructure investments for emerging infectious diseases in Kenya and supports national and regional surveillance and response capacity. This program is the first of its kind, coupling a laboratory management component with the established applied epidemiology curriculum into a degree granting program. The FELTP has served as a regional platform for training of field epidemiologists and laboratory managers.

The FELTP aims to develop a sustainable training program in applied epidemiology and laboratory management, strengthen the public health surveillance system at all administrative levels of Kenya, support timely response to public health outbreaks, and enhance public health laboratory capacity at all administrative levels in Kenya.

The FELTP awards a Master degree in Applied Epidemiology and Public Health Laboratory Management. The 2-year program places emphasis on service, providing real results to the MOH as the residents pursue their degree. Field projects involving outbreak response, surveillance, laboratory methods, and research of public health issues will improve the public health of Kenya and strengthen the capacity of the public health system.

The FELTP has served as a regional program that covers Kenya, Tanzania, Uganda, Southern Sudan, and Ghana. Participants from these countries receive instruction and support in Kenya, but return to their home country to conduct field assignments, providing service to their respective MOH. Graduates are now supporting FELTPs in Nigeria, Tanzania, and Rwanda. The program now primarily serves South Sudan and Kenya.

Team members

Atlanta-based staff

- Donna Jones, Team Lead
- Jim Vaughan, Instructional Designer
- Andrew Weathers, Public Health Advisor

Kenya-based staff

MOPHS

- Jared Omolo, Program Director, Nairobi
- Samuel Amwayi, Epidemiology Field Coordinator
- Ahmed Mohamed Abade, Lab Field Coordinator
- Marion Mwangi, Administrative assistant through the African Field Epidemiology Network (AFENET)

CDC Kenya

- Joseph Oundo, Laboratory Advisor
- Myat Htoo Razak, Resident Advisor (departed 8/2009)
- Christine Ouko, Program Manager

Contact information

Address

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Partners

- CDC partners: Global Disease Detection Program, Global AIDS Program, Flu, CDC Foundation
- AFENET
- Ellison Medical Foundation
- Jomo Kenyatta University of Agriculture and Technology/Institute for Tropical Medicine and Infectious Diseases
- Kenya Ministry of Public Health and Sanitation (MOPHS)

- Kenya Medical Research Institute
- MOH for Southern Sudan
- President's Malaria Initiative
- Walter Reed

Cohort information
- Current number of trainees for cohort 5: 14
- Current number of trainees for cohort 6: 13
- Total number of graduates as of 2009: 20

Strengthened public health workforce
The program director, Dr. Jared Omolo, is a graduate of the 2nd cohort. Ahmed Abede and Samuel Amwayi are graduates of the 3rd cohort and serve as field coordinators for the Kenya program.

Additionally the program has provided staff for the Nigeria FELTP; Dr. Patrick Nguku of the 1st cohort, is the resident advisor in Nigeria. Three Tanzanian graduates are serving as staff for the Tanzania FELTP. A Ghanaian graduate is serving as the resident advisor for the Rwanda FELTP.

Investigations and surveillance projects for 2009
- Number of outbreak or emergency investigations conducted and completed: 9
- Number of planned (protocol-based) studies conducted and completed: 16
- Number of surveillance evaluations conducted: 12

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Principles and practice of field epidemiology for public health professionals, Kenya	Participants from the MOPHS and Ministry of Medical Services	2 weeks	25	The course was aimed at strengthening the capacity of the public health system in responding to disease outbreaks and/or unusual public health events at district level, increasing laboratory participation in outbreak investigation and surveillance, and promoting the use of computer to manage public health activities effectively

Publications
There an Epi Bulletin called *Ministry of Public Health and Sanitation Weekly Epidemiologic Bulletin*. It is published 52 times a year. Alumni are leading the publication with technical support from the program.

Other accomplishments
Avian influenza and other zoonoses stakeholders consultation workshop, Nairobi, Kenya, October 2009
The FELTP was instrumental in the workshop that was a follow up of the Avian Influenza and Other Zoonoses stakeholders' consultation workshop (19-20 August, 2008) where it was resolved to form a 16-member technical zoonotic disease working team of members from various institutions and organizations. The various bodies thereafter nominate one technically qualified member to the team.

The workshop was attended by 14 participants from ministries and organizations who witnessed the official launching of the zoonotic technical working group. It was agreed that the Ministry of Livestock development would chair the Zoonotic Disease Technical Working Group for the 1st year. The first task for the team was to identify priority diseases to address before the next meeting whose objective will be to establish a plan of action. It was also agreed that FELTP residents (one from the veterinary and human health) should be selected to help identify the zoonotic diseases in the country with the guidance of epidemiologists from the Ministry of Livestock Development and MOPHS, Division of Disease Surveillance and Response.

5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009
The FELTP hosted the conference, which was attended by more than 350 participants who traveled from most part of the world. A total of 103 posters and 50 oral presentations were made.

Status of program independence and sustainability
The FELTP was placed under the Department of Disease Prevention and Control, MOPHS, and assigned three full-time staff (all alumni).

Monitoring and evaluation activities
- A graduate of the FELTP conducted a survey of graduates and residents to assist the program in identifying ways to improve course and field work
- The program will have the first pilot of facilitated self-assessment in Africa
- EpiTrack has been provided

Outcomes
The FELTP has been involved in the preparedness and response to the H1N1 outbreak. In July 2009, seven residents were involved in sensitization and training of health workers on H1N1 in four different provinces: Coast Province, North eastern province, Eastern province, and Nairobi. One resident participated in the contact tracing and investigation of the contacts of the already confirmed cases in Kisumu. All residents were trained in July 2009 on how to sensitize health workers on H1N1. They also participated in preparations for a countrywide exercise which involved training of health workers in major hospitals about H1N1. The training emphasized case definitions, case management, infection prevention, sample collection, and sample packaging.

SOUTH SUDAN FELTP

Program description
Communicable diseases remain a major concern in South Sudan. The main causes of morbidity and mortality are infectious and parasitic diseases including diarrhea diseases, malaria, measles, and acute respiratory infections (ARI), and viral diseases among others. South Sudan shares the largest (80%) burden of the total guinea-worm cases worldwide. Other epidemic-prone diseases like sleeping sickness and leishmaniasis are endemic in certain parts of the country. Except for the excellent progress in the surveillance and eradication of poliomyelitis, detection and registering of other disease syndromes is yet to be improved.

In recognition of the urgent need to build surveillance functions for the control of communicable diseases, the MOH decided to adopt and implement the Integrated Disease Surveillance and Response (IDSR) approach in South Sudan (October 2006).The initial activities included sensitization of MOH staff and partners on IDSR and establishment of IDSR. To accelerate the implementation process of IDSR, the MOH asked CDC for technical assistance in the assessment of the national communicable disease surveillance and for the development of a plan of action for South Sudan. An assessment was done in July 2006 and a plan of action was developed and adopted.

Communicable diseases continue to be the major threat to the health development in South Sudan. The complex and recurrent epidemics coupled with devastation from the conflict is claiming hundreds of lives every year. The economic and development impact of these epidemics is evident through analysis of various indicators, including health. Despite efforts to contain and control communicable diseases, the activities for control and response are met with various challenges.

The African Field Epidemiology Network (AFENET), with support from CDC, continues to assist the Government of Southern Sudan (GOSS) in disease control and has been implementing one of the Health Policy focus areas: Technical Support to the Epidemiology and Surveillance Department in the Directorate of Preventive Medicine, state and county health departments through strengthening field epidemiology, communicable diseases surveillance, and improving disease outbreaks.

Team members
- Andrew Weathers, Team Lead
- Italia Rolle, Epidemiologist

Partners

- CDC partners: CDC Kenya (IEIP, Refugee Health, GAP)
- AFENET
- GOSS MOH
- USAID/Sudan Field Office
- WHO

Other projects or programs conducted in 2009

IDSR training of health workers in Southern Sudan

The most effective way to strengthen national disease surveillance and response systems is to use the integrated approach which involves

- Intensifying training (in- and pre-service) targeting in particular for the county health teams
- Establishing focal points and mechanisms for coordination of surveillance activities
- Strengthening data management at central (national), intermediate (state), and peripheral levels (county and facility)
- Establishing efficient communication networks within the country for prompt reporting
- Building laboratory capacity, including networking, at national and regional levels to support surveillance activities

The strongest tool for implementing the above integrated approach is through IDSR training of the health workers, particularly at the state and county level.

In Southern Sudan, CDC has supported AFENET which has been engaged as a technical partner with WHO and MOHs to support the states to design and implement the training of health workers in the above-mentioned areas.

The training workshops on IDSR were organized by state MOHs in collaboration with MOH-GOSS and WHO. These have been conducted in 7 of the 10 states of Southern Sudan (Central, Western, Eastern Equatorial, Lakes, Warrap, Unity, and Bentui). Currently, preparations for the three states of Jonglei, Northern, and Western Bahar Garzal are underway and AFENET is involved in the preparation of materials and training guidelines. The trainings are yet to be rolled out to cover training at county level. Refresher trainings are planned for to cover all 10 states. More than 252 health workers from all implementing agencies of health and stakeholders involved in health service provision benefited from the trainings. Another 60 people were trained during outbreak on-site trainings. These workshops were held in recognition of the need to implement IDSR tools and build the capacity of surveillance officers to strengthen the surveillance network in all counties. Most of the participants who attended the IDSR trainings were healthcare providers working in different health facilities because healthcare providers are usually the first contact point with patients and it is the health facility that is the most important level for disease detection and response. Therefore, healthcare providers at the peripheral level play an important role in disease surveillance and they need to be trained on IDSR.

Aims and objectives of the IDSR trainings

The aim of the IDSR training workshops were to strengthen the capacity of surveillance officers and other health personnel from various levels of the health system in the implementation of enhanced and integrated surveillance system to detect and respond to outbreaks. Specific objectives were to

- Strengthen collection and reporting of surveillance and laboratory data from health facilities to the state and national level
- Disseminate and promote the usage of IDSR technical standards, guidelines, and tools for communicable disease control in humanitarian emergencies
- Improve information and communication between national, state, and county levels for immediate public health control measures and monitoring the situation throughout the year
- Promote partnerships at the local and national level to improve data collection and reporting and overall outbreak response
- Establish focal surveillance points in the various counties that were represented at the workshop
- Develop reporting mechanism plans for each county that will entail the reporting channels that are self sustaining and self reliant

The IDSR trainings consisted of updates of the current situation of surveillance at national or state levels and current challenges. Different presentations explaining the different stages of IDSR were presented by facilitators from MOH-GOSS, AFENET, and WHO South Sudan. The key lectures included: list of priority communicable diseases, case definition of priority diseases, tools for data collection, role of laboratory to strengthen surveillance (collection, labeling, packaging/handling and transport), practice completing/collecting the data, simple tabulation of cases (morbidity and mortality data+ CFR), interpretation of data and information flow. A hands-on session was provided for participants to review and practice IDSR tools. At the end of the workshop, each county developed plans to expand and improve surveillance in all payams and health facilities.

At the end of the workshop, participants committed themselves to

- Strengthen collaboration and partnerships between communities and other organizations working on health
- Strengthen surveillance network at county and state levels
- Disseminate IDSR tools to all health facilities
- Raise awareness of the IDSR in their immediate environments

All workshops were supported by the Director Generals (Health) of the states, representatives of the political administration of the states, GOSS-MOH representatives, and WHO Juba representatives, both at the opening and closing ceremonies. This is an indication of a high-level of commitment of the major players in the health sector.

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Outbreak investigation training	County level public health workers	2 weeks	60	Trainings conducted with minimal support from CDC by South Sudanese graduates of the Kenya Regional FELTP
IDSR training	District and payam level primary healthcare workers and NGO volunteers	1 week	250	Training conducted by FELTP graduates in conjunction with WHO and AFENET with minimal support from CDC

Future plans

CDC will support the delivery of one final 2-week outbreak investigation training through AFENET with the final funds remaining from USAID in January 2010. It will focus on state and county level public health workers and will include facilitators from throughout East Africa. No additional funds are available to support activities in South Sudan beyond this course.✦

Nigeria FELTP

Program description
The Nigeria FELTP was established in 2008 as a long-term ongoing training program providing public health epidemiology service to the Nigerian Federal MOH (FMOH), the Federal Ministry of Agriculture and Water Resources (FMAWR), and respective state ministries. Training public health epidemiology residents, public health laboratory residents, and veterinary epidemiology residents for leadership positions in both ministries, the Nigeria FELTP is the first FELTP to offer a distinct track for veterinary epidemiology. The FELTP works towards improving public health systems within Nigeria through training, increasing collaborations, and strengthening linkages between epidemiologists and laboratorians, and linkages between the human and animal health sectors. Other partners include Ahmadu Bello University (ABU) and the University of Ibadan (UI), both will provide a Master degree upon successful completion of the FELTP. Fiscally, the program is sustained primarily through support from USAID and the President's Emergency Plan for AIDS Relief (PEPFAR).

To address the need for training veterinarians, the division collaborates with CDC's National Center for Zoonotic, Vector-Borne, and Enteric Diseases (NCZVED). The goals of this collaboration are providing technical support to the Nigerian FMOH and FMAWR to enhance the quantity and quality of applied epidemiology training with an emphasis on zoonotic diseases, especially avian influenza, and enhance disease-specific program monitoring and evaluation leading to evidence-based decisions for the overall improvement of public health practice in Nigeria.

Team members
Atlanta-based staff
- Peter Nsubuga, Team Lead
- Michele Evering-Watley, Instructional Designer
- Ken Johnson, Public Health Advisor
- Nykiconia Preacely, EIS Officer

Nigeria-based staff
- Lora Davis, Veterinary Epidemiologist
- Patrick Nguku, Resident Advisor
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Partners
- CDC partners: CDC Nigeria GAP, NCZVED
- ABU
- AFENET
- Nigeria FMAWR
- Nigeria FMOH
- USAID
- UI

Cohort information
- Current number of trainees for cohort 1: 13
- Current number of trainees for cohort 2: 13

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 5
  - Acute renal failure outbreak among children under 5 years due to diethylene glycol poisoning
  - Cerebrospinal meningitis
  - Lassa fever
  - Cholera (in Nigeria and Cameroon)
  - Leptospirosis
- Number of planned (protocol-based) studies conducted and completed: 3
  - Leading causes of death in the Federal Capital Territory, Abuja, Nigeria

  - Risk factors for cholera outbreak in Jigawa State, September 2009
  - Risk factors for leptospirosis among kennel workers, Abuja, Nigeria
- Number of surveillance evaluations conducted: 13
- Number of surveillance analyses conducted: 13

Other projects or programs conducted in 2009

- The program has been supporting other programs; in March a program staff and resident were involved in the first Rwanda outbreak investigation short course
- In November, a program staff was involved in the residents' selection process of the West African FELTP that involves Burkina Faso, Niger, Togo and Mali; the program shared relevant tools for selection of candidates and field sites
- The program launched its website in November (www.nigeria-feltp.net)
- Saheed Gidado, a 2nd year resident, was the 3rd best oral presenter in the 5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009
- Oladayo Biya spent 3 weeks in Northern Cameroon supporting a cholera outbreak response in November as part of an AFENET/EIS epidemiological support
- The program convened five residents' seminars that involved all FELTP stakeholders and were an important forum for disseminating works by residents and fostering further collaborations between human and animal health sectors
- Residents worked on the following zoonotic disease-specific projects: rabies, Lassa fever, leptospirosis, and H1N1 through a multi-sectoral approach that involved physicians, laboratorians, and veterinarians
- The program is developing state level field sites in the Ministries of Health and Agriculture to better support disease control activities at the state level

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
2 outbreak investigation course	State epidemiologists, laboratorians, veterinarians, and avian influenza desk officers	2 weeks didactic and 3 months field project	77	Surveillance and outbreak investigation capacity build
1 zoonoses short course	State epidemiologists, state veterinarians, federal surveillance officers (Ministry of Health and Agriculture)	2 weeks didactic and 3 months field project	35	Stronger collaboration between animal and human health surveillance officers in zoonoses control
3 regional integrated disease surveillance and response (IDSR training)	Zonal epidemiologist, expanded program on immunization officers	5 day	100	Better surveillance and outbreak detection for vaccine-preventable diseases, residents were involved in training.

Other accomplishments

Since 2007, the program has conducted eight short courses (five outbreak investigation, two HIV/TB collaboration, and one zoonosis). A total of 271 persons have been trained at the federal and state level.

Status of program independence and sustainability

The program is developing a 5-year strategic plan to aid in advocacy for broad funding sources. The government has made commitments to begin funding some aspects of the program.

Monitoring and evaluation activities

- Conducted weekly evaluations during didactic sessions
- Conducted an in-depth residents self-evaluation of the program
- Implemented the Epi-track monitoring software

Outcomes

Impact on the surveillance systems, resulting from various surveillance evaluations

- An improved data capture form for the diagnosis of rabies in dogs in the National Veterinary Research Institute was developed that enabled the institute to capture patient-based information that would aid in subsequent follow-up; previously the animal, human, and community linkages in rabies control were limited
- The Federal Department of Livestock developed an access-based software to enhance timely disease reporting
- The Federal Department of Livestock commenced preliminary analysis of the Participatory Disease Surveillance data that enabled feedback to the surveillance catchment area
- An evaluation of the integrated disease surveillance and response has lead to improvement of the training content and approach to ensure that the disease surveillance and notification officers at the LGA level are better reached

Improved management of acute health events/emergency investigations

- Development of better public health messages helped control the acute renal failure outbreak in children and limited the extend of spread of the contaminated acetaminophen
- The Nigeria National Food and Drug Administration and Control implemented the recall of contaminated batches of medicine that caused acute renal failure in children and also intensified inspection and regulation of all pharmaceutical products both within and before entry into the country
- Personnel of a Public Health Laboratory of the Nasarawa State MOH took a short course on outbreak investigation and response in July due to resident's recommendation on inadequate capacity of the staff
- States engaged in health education of communities affected by cerebrospinal meningitis and cholera based on specific finding by residents' investigations that delineated the specific high-risk groups and risk factors; the consequent reactive vaccination campaigns were targeted to the age groups with the highest attack rates
- Procured and prepositioned relevant laboratory reagents and drugs in affected states for prompt confirmation and treatment of future outbreaks of cholera
- Residents' work in Lassa fever and rabies control fostered closer inter-sectoral collaborations between the MOHs and Ministries of Agriculture

Improvement or development of public health programs/creation or improvement in a public health policy or regulation

There was improved mortality reporting and surveillance system in the Federal Capital Territory in Abuja following a mortality surveillance project conducted by the residents.✦

Pakistan FELTP

Program description
The Pakistan FELTP is a component of a broader CDC effort to strengthen Pakistan's disease surveillance and response capacity. The FELTP is also helping to implement the Pakistan National Plan of Action for Surveillance, focusing on the country's self-identified priority diseases such as influenza, hepatitis, and polio. To strengthen Pakistan's surveillance and response capabilities, the FELTP is working to revise the legal framework for surveillance, demonstrate best practices in surveillance methodologies, develop an electronic information management system, and establish quality laboratory testing for hepatitis and influenza. These systems, and the lessons learned, will be expanded to address other priority diseases.

Following is a more detailed description of each of the Pakistan FELTP components.

Pakistan FELTP
The Pakistan FELTP is a 2-year, in-service training program in field epidemiology. The program currently includes 25 residents, 23 employed by the MOH from all provinces, federally administered areas, and national programs. Two Afghan residents from the Afghanistan MOH joined the 3rd cohort in 2009. The FELTP has been accredited by the University of Health Sciences in Lahore and Quaid e Azam University in Islamabad. Graduates of the program are eligible to receive a Master in Field Epidemiology pending successful completion of a final examination through the University of Health Sciences in Lahore, Pakistan. The 1st cohort of residents graduated in the fall of 2009, the 2nd cohort will graduate in the summer/fall of 2010, and the 3rd cohort is currently underway. Recruitment for the 4th cohort will begin in August 2010.

Viral Hepatitis
Viral hepatitis is identified as a priority under the Prime Minister's National Plan for Hepatitis. In support of this plan, the FELTP established a hospital-based sentinel surveillance in five pilot sites in Islamabad, Peshawar, Lahore, Karachi, and Quetta. These sites are staffed by medical officers and laboratorians at each of the pilot sites to coordinate data and sample collection, analysis, and reporting.

Legal Framework for Surveillance
CDC, WHO, and the MOH developed a draft legislation after consultations with provincial departments of health. The next phase will include broader consultations with different ministries, including the Pakistan Law Ministry, to get it ready for final submission to the Parliament of the Government of Pakistan. This will provide the legal structure to the proposed integrated disease surveillance system and fulfill the requirements of IHR.

Laboratory Quality Systems
In response to an identified need established during a surveillance assessment conducted in 2004, the National Institute of Health (NIH) of Pakistan has proposed the establishment of a public health laboratory network. In support of this network, the FELTP has conducted multiple courses in Quality Assurance, Quality Management Systems, and Bio-Safety practices.

Informatics
CDC has deployed an electronic disease surveillance system at five pilot sites using established surveillance protocols for hepatitis. Following a pilot period, the system will be reviewed and improved based on feedback from medical officers and laboratorians on the ground. If the system proves to be useful, it may be expanded to other diseases and deployed throughout the country.

Influenza Surveillance
In response to outbreaks of H5N1 influenza in poultry in Pakistan in 2006, and to build respiratory disease surveillance, the FELTP is working with NCIRD and the MOH to measure the disease burden of influenza through sentinel site surveillance and is establishing a population-based early warning system for pandemic and/or avian influenza. CDC is also supporting the MOH in establishing Epidemic Investigation Cells at the provincial level that will be responsible for analyzing and respond-

ing to data from sentinel and population-based data such as that from the influenza surveillance project.

Team members

Atlanta-based staff

- Henry Walke, Team Lead
- Nabil Ahmed, Public Health Advisor
- Lisa Bryde, Instructional Designer
- Dana Schneider, Health Scientist

Pakistan-based staff

Rana Jawad Asghar, Resident Advisor

Contact information
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Pakistan

Partners

- CDC partners: National Center for Influenza and Respiratory Diseases, National Center for HIV, Hepatitis, TB, STD Programs, Division of Laboratory Systems, Division of Viral Hepatitis
- Health Services Academy, Islamabad
- Institute of Public Health, Lahore
- National Agricultural Research Centre
- Pakistan Federal MOH
- Pakistan NIH
- University of Health Sciences – Lahore
- USAID
- WHO (Geneva and Pakistan)

Cohort information

- Current number of trainees for cohort 2: 11
- Current number of trainees for cohort 3: 14 (includes 2 from Afghanistan)
- Total number of graduates as of 2009: 8

Strengthened public health workforce

First Cohort

- Deputy Director General, Planning and Development, MOH, Islamabad
- Senior Demonstrator, Community Medicine, Rawalpindi Medical College, Rawalpindi Department of Health, Punjab
- Program Director, District Health Development Centre, Pakpattan Department of Health, Punjab
- Assistant Director, Public Health, Department of Health, Peshawar, NWFP
- NGO Training and Research Coordinator, Provincial AIDS Control Program, Peshawar Department of Health, NWFP
- Senior Medico-legal Officer, Attock Department of Health, Punjab
- Scientific Officer, Department of Microbiology, Public Health Laboratories Division, NIH, Islamabad
- Medical Officer, Bunji District, Astore Department of Health, FANA

Second Cohort

- Assistant Professor, Department of Community Medicine, Bannu Medical College, Department of Health, NWFP
- Senior Manager, Serology, National HIV /STI Referral Laboratories, National AIDS Control Program, NIH, Islamabad
- Senior Medical Officer, Punjab Prisons, Lahore
- Assistant Chief Planning Officer, Quetta Department of Health, Baluchistan
- Provincial Master Trainer, Sindh Integrated Management of Childhood Illnesses, Department of Health, Sindh
- Deputy Program Manager, District Health Information System, Peshawar, NWFP
- District Coordinator, National Program for Family Planning and Primary Health Care, Pakpattan, Punjab
- Deputy District Officer (Health), Bukkhur Department of Health, Punjab

- Medical Officer, District Okara Department of Health, Punjab
- Medical Officer, Detoxification and Rehabilitation Complex, Quetta, Baluchistan
- Medical Officer, District Kashmore Department of Health, Sindh

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 3
- Number of planned (protocol-based) studies conducted and completed: 3
- Number of surveillance evaluations conducted: 11 (one each by every student of the 2nd cohort)

Other projects or programs conducted in 2009
- The FELTP facilitated the development of the first ever draft Legal Framework for Disease Surveillance in the country
- FELTP fellows of 1st cohort lead a Pakistani Delegation in the United Nation's Disease Surveillance Experts Meeting of Biological Weapons Convention held in August and participated in Meeting of the State Parties in December
- Three residents of the 1st cohort were selected for the Certificate Program for Emerging Infectious Disease Epidemiology at the College of Public Health, University of Iowa, USA

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Surveillance and response course	Medical professionals	4 weeks	26	Public health professionals from several provinces (AJK, FATA, FANA) trained on disease surveillance and outbreak investigation
Acute hepatitis surveillance	Surveillance staff	3 trainings of 3 days duration each	15	Surveillance and laboratory professionals trained on standard protocol for surveillance of acute hepatitis and laboratory techniques
Bio-safety and quality assurance	Lab personnel	3 days	30	Public health professional and laboratory personnel from public sector trained at Armed Forces Institute of Pathology, Rawalpindi

Other accomplishments
Five FELTP residents from the 1st cohort received training on "Multi-Drug Resistance Tuberculosis in Pakistan" held in Istanbul, Turkey, January 2009

Status of program independence and sustainability
- The Pakistan MOH has taken on many of the living expense costs for the residents when they attend trainings in Pakistan
- Each cohort has representation from all provinces and federally administered areas of Pakistan
- The MOH has provided administrative leave to several employees who are instructors in the Pakistan FELTP
- The MOH is working closely with the FELTP to design and implement an Integrated Disease Surveillance and Response Program envisaging development of a cadre for field epidemiologists
- An enhanced/accelerated program for the prevention and control of hepatitis has been approved by the Government of Pakistan to carry forward the project of Sentinel Site-based Acute Hepatitis Surveillance project initiated by the FELTP
- A formal coordination mechanism has been established with priority national health programs for attachment of FELTP residents

Monitoring and evaluation activities
The FELTP has entered an agreement with the Institute of Health Metrics and Evaluation, which will work closely with the resident advisor to conduct evaluation activities.

Outcomes

Based on the recommendations of residents after evaluation of ongoing surveillance systems, the following have been accomplished:

- A draft proposal for Integrated Disease Surveillance and Response and Public Health Laboratories Network has been developed by the MOH
- A sentinel site-based Acute Hepatitis Surveillance Project has been developed and initiated in five tertiary care hospitals in capital and provincial headquarters
- A draft legal framework for disease surveillance has been developed and circulated to provincial health departments for inputs✦

South Africa FELTP

Program description
Established in 2006, the South Africa FELTP (SAFELTP) was developed to address the increasing burden of infectious and non-infectious diseases among the estimated 47.4 million inhabitants of South Africa.

The primary objective of the SAFELTP is to train public health leaders in applied epidemiology and public health laboratory practice, with an emphasis on problem-solving to provide public health service to the national and sub-national health authorities in South Africa. The SAFELTP is ideally suited for building this type of innovative human capacity needed through 1) serving the government at the national, provincial, district and local levels while undergoing training; 2) creating and training a core group of public health workers and leaders to support the South African public health system; and 3) strengthening the capacity of South Africa in applied epidemiology, laboratory, and management across public health institutions.

While in service, residents are involved in activities designed to enhance disease-specific program monitoring and evaluation leading to evidence-based decisions for improvement, laboratory QMS and information systems improvement, and data quality and data analysis integration into different cross-cutting disease programs. The program is supported with funds from the President's Emergency Plan for AIDS Relief (PEPFAR), but also receives support from the National Health Laboratory Service (NHLS), National Institute of Communicable Diseases (NICD) and Departments of Health (DOH) in terms of salaries, administrative assistance, office space, training rooms, laboratories, and equipment and supplies for the program.

The program's main output is graduates with a Master of Public Health and 2 years of supervised work experience and training aimed at strengthening practical skills and knowledge. Residents participate in several core modules at the University of Pretoria and NICD and work under a supervisor for the remainder of the 2 years at field placement sites at national, provincial, district or municipal level within DOH and NHLS. Upon completion of all the requirements of the training program, residents take up positions as national and provincial epidemiologists, public health laboratorians, surveillance officers or other relevant positions in the South African public health system.

Two applied field epidemiology short courses are presented annually aimed at public health professionals from national and provincial DOHs, and local and municipality metro city councils who are involved in communicable diseases control, disease surveillance, outbreak investigations, and data management.

Team members
Atlanta-based staff
- Peter Nsubuga, Team Lead
- Ken Johnson, Public Health Advisor
- Juliette Mannie, Program Analyst
- Italia Rolle, Epidemiologist

South Africa-based staff
- Thurma Goldman, CDC South Africa Director
- Bernice Harris, Program Director
- Faustine Ndugulile, Laboratory Resident Advisor
- Elizabeth Prentice, Laboratory Coordinator
- Khin San Tint, Epidemiology Coordinator
- Barbara Temane, Administrative Assistant
- Mufuta Tshimanga, Epidemiology Resident Advisor

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Partners
- CDC partners: CDC South Africa, National Center for HIV, Viral Hepatitis, STD, and TB Prevention, International Laboratory Branch

- AFENET
- HHS Services Pandemic Influenza Fund
- NICD
- NHLS
- South Africa National DOH
- South Africa Provincial DOHs
- University of Pretoria

Cohort information
- Current number of trainees for cohort 2: 9
- Current number of trainees for cohort 3: 12
- Total number of graduates as of 2009: 10

Strengthened public health workforce
A total of 17 SAFELTP alumni are employed in public health services; 2 at NHLS, 4 at NICD, 2 at the National Institute for Occupational Health (NIOH), 5 at the DOH, 2 for NGOs, and 2 at the SAFELTP.

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 17
- Number of planned (protocol-based) studies conducted and completed: 21
- Number of surveillance evaluations conducted: 11
- Number of surveillance analyses conducted: 8

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Applied field epidemiology short courses	Public health professionals from national, provincial, and local DOH	2 weeks	64	Two courses were held: one in Pietermaritzburg and the other at NICD; 61 participants undertook 47 field projects in the 3 months between the two contact weeks and presented their findings in the 2nd week

Publications
There is a *Communicable Disease Surveillance Bulletin*. The SAFELTP is a contributing author to the bulletin.

Other accomplishments
The SAFELTP conducted its first scientific meeting. The theme was "Providing Evidence for Public Health Transformation." It was an opportunity for residents to deliver 9 oral and 26 posters presentations on a range of public health investigations conducted during their training. Residents showcased their work in key public health areas such as planning for the Soccer World Cup 2010, typhoid, Rift Valley fever, TB, and other priority diseases in South Africa. The impact of these residents is already evident as they were actively involved in the investigation and identification of the new arenavirus entitled "LuJo" (named after the connection between Lusaka, Zambia, and Johannesburg, South Africa).

In addition to the residents' presentations, plenary session were held with South African and CDC subject matter experts in zoonotic and vector-borne diseases, traveler and refugees health, drug-resistant TB, and HIV/AIDS. These sessions engaged residents and visiting representatives from South Africa's national and provincial health departments and laboratories, various local universities, the MOHs of Zimbabwe and Mozambique, CDC in productive discussions addressing solutions to problems that exist nationally and internationally in these areas.✦

South Caucasus FELTP

Program description
The South Caucasus FELTP (SC-FELTP, previously known as the Georgia FELTP) began in June 2009, enrolling its 1st cohort of 12 residents. In June 2010, the 2nd cohort of 15 residents will start their training.

The SC-FELTP builds self-sustaining institutionalized capacity in the South Caucasus countries of Georgia, Azerbaijan, and Armenia through a competency based training program in field epidemiology, veterinary epidemiology, and laboratory quality management systems integrated with epidemiologic practice to achieve organizational excellence in public health practice. The improvements will be accomplished by leveraging the successes and experience of the division's Sustainable Management Development Program (SMDP), Global Disease Detection Program (GDD), the Division of Laboratory Systems (DLS) expertise in Quality Management Systems (QMS), together with the support and sponsorship of the U.S. Department of Defense's Defense Threat Reduction Agency (DOD/DTRA), the U.S. Department of State's Biosecurity Engagement Program (DOS/BEP), and HHS's Office of Global Health Affairs (OGHA).

Separate memoranda of understanding to establish the SC-FELTP were signed between CDC and the Georgia National Center for Disease Control and Public Health (NCDC), the Ministry of Labor, Health, and Social Affairs, and the Ministry of Agriculture (MOA) in 2008. The Azerbaijan MOH and Ministry of Agriculture signed a similar memoranda with CDC in 2009. Discussions between CDC and counterparts in the Ministries of Health and of Agriculture from the Republic of Armenia began in 2008. The SC-FELTP enrolled the 1st cohort in June 2009, with participants drawn from Georgia and Azerbaijan; Armenia participation is projected for the 2010 cohort.

The SC-FELTP is linked to a modular style laboratory quality systems and management development program, with collaboration from DLS, CGH's OD, and SMDP.

Team members
Atlanta-based staff
- Russell Gerber, Team Lead
- Hiari Imara, Public Health Advisor

Georgia-based staff
- Edmond Maes, Epidemiology Resident Advisor
- Thomas Rush, Laboratory Resident Advisor
- Tamar Bolkvadze, Administrative Assistant
- Marika Geleishvili, Assistant Laboratory Advisor and Translator
- Manana Kuparadze, Technical Translator
- Naile Malakmadze, Assistant Epidemiology Advisor and Translator
- Joni Vepishvili, Driver

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Partners
- CDC partners: DLS, GDD
- Armenia MOH, MOA (agreements expected to be signed in 2010)
- Azerbaijan MOH, MOA
- DOD/DTRA
- DOS/BEP
- Georgia NCDC, MOH, MOA

Cohort information
- Current number of trainees for cohort 1: 12

Investigations and surveillance project activities in 2009
- Number of outbreak or emergency investigations conducted and completed: 4
- Number of surveillance evaluations conducted: 12

Other projects or programs conducted in 2009

- Assist DLS in the development of technical Standard Operating Procedures (SOPs) for DOD/DTRA approved laboratory diagnostics of select agent pathogens
- Provide laboratory QMS mentorship for NCDC QMS workgroups on rollout of training and laboratory assessment programs

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
EpiInfo	NCDC	1 week	4	Participants added to intro class
Refugee Health	Ministry of Migration	2 days	4	CDC guest lecturer
Lab QMS	Georgia MOH; NCDC; MOA	2 weeks	30	Training led by DLS with participation from SC-FELTP lab Resident Advisor
Lab QMS	Azerbaijan MOH; MOA	2 weeks	30	Training led by DLS with participation from SC-FELTP lab Resident Advisor
Lab QMS	Georgia MOH; NCDC; MOA	2 weeks	20	Training led by DLS with participation from SC-FELTP lab Resident Advisor

Other accomplishments

- Creation of complete FELTP curricula in Russian language began in 2009 and is ongoing
- Creation of an epidemiology glossary in English-Russian-Georgian-Azeri languages began in 2009 and is ongoing
- Administration and staffing of a new program has been set up

Status of program independence and sustainability

- Signed memoranda of understanding with counterpart agencies in Azerbaijan and Georgia
- SC-FELTP office and classroom space was provided in-kind by Georgia NCDC
- Georgia NCDC provided vehicle, driver, and advisor to participate in outbreak investigation
- Developing collaborations with other multinational agencies such as the World Bank
- Playing key role in preparing local staff for new surveillance infrastructure and laboratory facilities developed with DTRA support

Monitoring and evaluation activities

The program uses EpiTrack to monitor residents' progress.

Outcomes

- Review of enteric disease surveillance to identify new policy and procedures for reporting, specimen collection, and laboratory testing algorithms
- Review of meningitis surveillance to identify new policy and procedures for reporting, specimen collection, and laboratory testing algorithms
- Development of SOPs and policy for surveillance and laboratory diagnosis of select agent pathogens

For more information on these country activities, see the Azerbaijan and Georgia section under "Management Capacity Building Programs."✦

Tanzania FELTP

Program description
The Tanzania FELTP (TFELTP) was officially established in October 2008. It is located in Dar es Salaam. The TFELTP is a 2-year service-based program that culminates with residents receiving a Master of Science from Muhimbili University of Health and Allied Sciences. The primary objectives of the program include

- Developing leadership in public health
- Providing epidemiological services
- Educating and training public health professionals in epidemiology and laboratory sciences
- Supporting public health laboratory services
- Conducting short courses on outbreak management, epidemiology, surveillance, and quality assurance
- Supplying technical support and advisory services to key stakeholders such as the MOH

The program targets physicians, public health practitioners, and laboratorians with at least 2 years of work experience. The program is structured in the following manner: formal didactic instruction which is taught by instructors from Muhimbili University, TFELTP staff, CDC Tanzania and CDC Atlanta staff, and practical hands-on field placement at the national and/or regional levels.

Team members
Atlanta-based staff

- Peter Nsubuga, Team Lead
- Michele Evering-Watley, Instructional Designer
- Italia Rolle, Epidemiologist
- Andrew Weathers, Public Health Advisor

Tanzania-based staff

- Patrick Kamugumya, Program Administrator
- Mohamed Mohamed, Field Coordinator
- Janneth Mghamba, Field Coordinator
- Peter Mmbuji, Program Director
- Fausta Mosha, Laboratory Resident Advisor
- Obinna Oleribe, Epidemiology Resident Advisor

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Partners

- CDC partners: Global AIDS Program
- AFENET
- Tanzania Ministry of Health and Social Welfare (MOHSW)
- Muhimbili University of Health and Allied Sciences
- National Institute for Medical Research (NIMR)
- President's Malaria Initiative

Cohort information

- Current number of trainees for cohort 1: 11
- Current number of trainees for cohort 2: 11

Investigations and surveillance project activities in 2009

- Number of outbreak or emergency investigations conducted and completed: 10
- Number of planned (protocol-based) studies conducted and completed: 11
- Number of surveillance evaluations conducted: 11

Other projects or programs conducted in 2009
In 2009, the MOHSW, the NIMR, the International Association of National Public Health Institutes (IANPHI), and CDC began collaboration on a project to address the burden of non-communicable diseases (NCDs) in Tanzania. One component of this strategy is to incorporate NCDs into the FELTP

curriculum and to encourage residents to concentrate on NCDs as their field assignment and thesis research.

In June 2009, two residents (Dr. Azma Simba, Applied Epidemiology, and Mr. Stanley Lyimo, Laboratory Management) made a presentation to Mr. Jacob Lew, Deputy Secretary of State in the U.S. Government. The presentation highlighted the benefits of the U.S. government's investment in public health to the Tanzania FELTP. This was during Mr. Lew's visit to the CDC country office.

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Outbreak investigation, management, and response	Provincial and district laboratorians, epidemiologists, medical officers, and other health workers	10 days	49	Two courses were conducted (in August and November). MOH personnel learned the principles of outbreak investigation and response and then completed a field project in their home province or district.

Status of program independence and sustainability

The Tanzania FELTP is in its early stages as a program, but has already taken a number of steps toward sustainability. The MOHSW has assigned two full-time staff to the program as field coordinators. The program sits in Tanzanian government-owned space (NIMR).

In 2010, there will be a strategic planning meeting to look at the direction of the program in the next 5 years. This will include transitioning funding for the program away from CDC and to the MOHSW or other sources and phasing out externally hired resident advisors for graduates of the program in the coming years.

Monitoring and evaluation activities

In 2009, CDC provided technical assistance to the TFELTP to set up an Epi Track database for monitoring and compiling field and university required activities of the residents. Additionally, CDC worked with Peter McElroy from the President's Malaria Initiative to set up a database to help track progress on the malaria indicators for Tanzania.

In 2010, Tanzania will be targeted as one of the countries in which the facilitated self assessment will occur.

Outcomes

The TFELTP conducted a 1-day workshop on surveillance evaluation reports, on February 4, 2009. This workshop was attended by various stakeholders who are collaborating with this program. These included officials from the MOHSW epidemiology section which was represented by the assistant director, program managers from EPI, TB and leprosy, malaria, reproductive and child health programs, among others. The meeting was also attended by staff from the CDC country office, CDC Atlanta, MUHAS and NIMR. The objective of the workshop was to receive results of the surveillance evaluations which were done by the residents. Eleven residents presented their findings on surveillance of HIV/syphilis, malaria, TB, IDSR, avian influenza, and laboratory based surveillance on measles and acute flaccid paralysis. The findings were discussed and sent to the program managers and other officials for action. Residents will follow up their recommendations and provide feedback.

The success of the FELTP has opened the door for an opportunity to collaborate on improving NCD surveillance through a partnership with IANPHI and NIMR. With this agreement came a dedicated budget to provide technical assistance on NCDs and to conduct NCD training and other activities in Tanzania.

IANPHI has provided $40,000 to help support two residents to focus on NCD-related work. In October 2010 residents will begin NCD surveillance at district level that is being established.✦

FELTPs in Development

Afghanistan FELTP

Program description
In 2009, in response to a request for assistance from the Afghan Ministry of Public Health (MOPH), CDC began a collaborative effort to develop an FETP in Afghanistan. The MOPH highlighted the following areas needing FETP assistance:

- A severe shortage of personnel who have any background in epidemiology
- A high burden of infectious diseases, many of zoonotic origin. Priority diseases include anthrax, Crimean-Congo Hemorrhagic Fever, brucellosis, rabies, plague, and TB

The new FETP has a particular focus on strengthening zoonotic disease surveillance systems and will work closely with animal health partners at the Ministry of Agriculture, Irrigation and Livestock (MAIL) to improve Afghanistan's capacity in this area. Through this program, the MOPH and the MAIL will acquire the means to build their own programs and capacity to improve public health on local, regional, and national levels.

During the start-up phase, the FETP is working to build public health capacity by enrolling two Afghans into the established FELTP in Pakistan. If possible, given the difficulties of working in a conflict country such as Afghanistan, training will be moved in country and larger cohorts will be enrolled.

Team members
Atlanta-based staff

- Henry Walke, Team Lead
- Dana Schneider, Health Scientist
- Nabil Ahmed, Public Health Advisor
- Lisa Bryde, Instructional Designer

Afghanistan-based staff

- Iqbal Aman, In-Country Program Manager
- Jawad Asghar, Resident Advisor, Pakistan FELTP

Partners

- Afghan Public Health Institute
- Afghan MOPH
- Afghan MAIL
- U.S. Department of State Bio-Engagement Program
- USAID

Cohort information

- Current number of trainees for cohort 1: 2

Training

Training type/title	Topics	Length	Number trained
Epidemiology, surveillance, and biostatistics	▪ Epi/surveillance ▪ Outbreak investigation	1 week	19
Provincial rapid response team training	▪ Rapid response ▪ Team building ▪ Outbreak investigation	3 weeks	40

Investigations and surveillance project activities in 2009
Evaluation of polio vaccination campaign coverage, Districts Multan and Muzaffargarh, Pakistan✦

Angola FELTP

Program description
A pre-assessment and an assessment visit have taken place in Angola. There are still many aspects of the proposed Angola FELTP that need to be determined. Angola MOH officials acknowledged that several weaknesses exist in the healthcare system, especially a lack of human and institutional capacity for implementing surveillance, performing outbreak investigations as well as their subsequent management further worsening the severity and duration of outbreaks of infectious diseases.

Despite these distressing conditions, health officials believe that an FELTP could carry out a vital role in addressing the deficiency of skilled staff in the country. The assessment teams that visited Angola were impressed with the enthusiasm of Angolan public health officials and their outlook on Angola's public health future.

Team members
- Ken Johnson, Team Lead
- Senia Espinosa, Health Education Specialist

Partners
- CDC partners: CDC Angola
- Angola MOH
- Agostinho Neto University

Accomplishments
Pre-assessment and assessment visits: CDC Angola contracted with a Brazil FETP graduate to serve as preliminary FELTP advisor.

Challenges
- With very little infrastructure, Angola is eager to start developing human capacity and bolster its surveillance system
- There is currently no public health school in Angola therefore there is no master-level program to compare FELTP to. Additionally, obtaining an MPH is not desirable for Angola. Progression within the MOH depends on obtaining a certificate of specialization. However, defining the specialization is very fluid and abstract.
- There are not many professionals in Angola that can serve as mentors for the FELTP
- The CDC Angola office is small and the director is the point of contact for FELTP
- Providing training that is exclusively in Portuguese is a challenge
- Obtaining sustainable funding is a challenge
- The CDC Angola office is small and without a dedicated person to focus on FELTP, planning becomes challenging

Future plans
- Host two FELTP short courses
- Develop the FELTP curriculum
- Establish an FELTP Steering Committee
- Decide if the FELTP will grant a degree or certificate
- Recruit a resident advisor
- Establish funding for an FELTP
- Establish and sign an MOU between partners
- Determine the start of the FELTP✦

Central Africa FELTP

Program description
The Central Africa FELTP (CAFELTP) is a component of two larger projects funded through the Bill and Melinda Gates Foundation and USAID's RESPOND project. The Gates-funded SURVAC project is intended to address the issues of expanding immunization coverage, improved diseases surveillance and response, and public health laboratory and human capacity development. In the Central African region, inadequate surveillance, data for the implementation of public health programs, especially vaccines-preventable diseases, and poor outbreak investigation, are major barriers to sustaining recent gains in measles control. This region has been chosen because of its epidemiologic importance in terms of emerging infections, the migration of people to, from, and within as a result of civil conflicts and its similarities of tropical environment, and disease problems across countries. The RESPOND project focuses on improving the detection and response to epidemic-prone and emerging zoonotic infections diseases that result from the interaction between human and domesticated or wild animal populations in the Congo River Basin.

The objective of the CAFELTP is to strengthen surveillance and response capacity and quality through training and infrastructure improvements, implement a quality surveillance and response program for vaccine-preventable diseases and syndromes—including laboratory capacity, networks, and data management systems—strengthen communication, and develop capacity for advocacy to ensure that these efforts are assumed by the MOHs in the targeted countries. Veterinary epidemiologists will be trained alongside public health professionals to address the ever-growing threat that zoonotic and epizootic diseases pose to the region. The program aims to increase collaboration between epidemiologists and laboratorians, as well as between human and the animal health sectors. In addition to the core curriculum, resident will have the option to concentrate in field epidemiology or public health laboratory, based on their qualifications.

Team members
Atlanta-based staff
- Italia Rolle, Team Lead
- Peter Nsubuga, Medical Epidemiologist
- John Ngulefac, Logistics Coordinator
- Jennifer Scharff, Health Scientist
- Andrew Weathers, Public Health Advisor

Partners
- CDC partners: CDC Foundation, National Center for Immunization and Respiratory Diseases
- Bill and Melinda Gates Foundation
- DAI
- USAID
- University of Yaounde 1
- WHO AFRO, Geneva, and Lyon

Accomplishments
In 2009, CDC and its partners in the SURVAC project conducted a desk review of five countries in the Central African Region and based upon defined selection criteria chose three countries in which to focus the project efforts: Cameroon, the Central African Republic, and the Democratic Republic of the Congo. Between September and November, detailed assessments were conducted in each of the three countries in four focus areas: epidemiological capacity, laboratory capacity, training capacity, and information technology capacity in the public health sector. Based on the assessments, a template for a national plan of action was put together that would assist each country with addressing their needs in the thematic areas within the scope of the project.

For the CAFELTP, internal evaluation of the assessments resulted in the selection of Cameroon as the host nation for the 2-year training program with the University of Yaoundé I as the institution through which the degrees would be granted.

Future plans

In 2010, the concentration will be on the following areas:

Development and approval of the curriculum and selection process for the FELTP through the University of Yaounde I and beginning of the FELTP training

- Hold a curriculum development workshop with the training focal points in each country
- Finalize the curriculum and submit it to the Rector of the University for approval
- Set the selection criteria for residents applying to the program and receive applications by August 1, 2010
- Select five residents from each country by September 1, 2010
- Start the Introductory Course on or about October 1, 2010

Staffing of the FELTP

- By July 31, 2010, the program will identify epidemiology and laboratory resident advisors for the FELTP to be placed in Yaounde, and funded through the SURVAC project
- By September 30, 2010, the program will identify an epidemiology resident advisor to be placed in Kinshasa, Democratic Republic of the Congo, and funded through the USAID/RESPOND project
- The program will identify space, administrative staff, and field coordination staff throughout the resident advisor recruitment process and secure those resources using the appropriate funding mechanism in each country

Organize and conduct disease surveillance and outbreak investigation short courses

- By July 31, 2010, CDC will partner with WHO Lyon to deliver short courses in disease surveillance and outbreak response to 20–25 public health workers in each of the three countries
- From these short courses, prospective candidates for the CAFELTP will be identified and encouraged to apply for the program✦

Iraq FELTP

Program description
In fiscal year 2009, CDC, the Iraqi MOH, the Iraqi Ministry of Higher Education (MOHE) and the World Health Organization (WHO) Iraq office established the framework and broad consensus to launch an FETP. This program will build public health capacity in disease surveillance, outbreak response, and program evaluation through training courses in applied epidemiology. The 1st cohort started in October 2009.

This 2-year in-service training program is supported by CDC, the WHO Iraq office in Amman, the Iraqi MOH, and the MOHE. Upon completion of the program requirements, graduates receive a high diploma degree in Public Health from the College of Medicine, Baghdad University. Training courses are conducted at Baghdad University, College of Medicine, Iraq MOH, Emory University-Atlanta, and at the Jordanian MOH, Amman, depending on the course, instructor, and classroom requirements. All fieldwork is carried out in Iraq, with mentoring and supervisory support from the MOH.

Team members
Atlanta-based staff
- Ron Moolenaar, Team Lead
- Steven Becknell, Public Health Advisor
- Senia Espinosa, Health Education Specialist
- Ban Majeed, Program Advisor

Iraq-based staff
Faris Al-Lami, Technical Advisor, Baghdad University

Partners
- Iraq MOH
- Iraq MOHE
- U.S. Department of State's Iraqi Scientist Engagement Program (ISEP)
- WHO-Iraq

Cohort information
- Current number of trainees for cohort 1: 7

Other projects or programs conducted in 2009
While the timetable for implementing the FETP has slipped due to insecurity and other programmatic challenges associated with the Iraqi environment (e.g., delays in getting the higher diploma approved by the MOHE, challenges with implementation in the context of the U.S. government's FTE operational restrictions) there has been significant progress on fiscal year 2009 objectives, as follows:

Objective 1: Start the FETP in May or October with 10 to 12 residents
Progress: The FETP started in October with seven residents. A technical advisor and program advisor have been hired and work out of the Baghdad CDC and University of Baghdad offices.

Objective 2: Customize the FETP standard curriculum to meet Iraq-specific needs, including approval from the MOHE
Progress: The standard curriculum has been modified for submittal to the MOHE for granting of higher approval. While the University of Baghdad has approved the higher diploma (equivalent to a Master and equivalent to a specialization that grants increased pay, responsibility, for graduates of the FETP), the MOHE has not signed the final approval.

Objective 3: Hold an introductory course in May or October 2009, in either Amman or Atlanta
Progress: The introductory course was abbreviated to 2 weeks and conducted in October in Amman, Jordan. This was done with the view towards having the second course, for 3 weeks, in Atlanta

in January 2010. The 3rd course is planned for May 2010 in Baghdad; before then, residents will undergo training in Epi-Info and Excel.

Accordingly, progress on all objectives has been made, and all objectives in fiscal year 2009 work-plan were met, except for final approval by the MOHE.

Conference
EMPHNET Regional Conference, presentation by Faris Al-Lami.

Status of program independence and sustainability
The Iraq FETP is located within the central MOH in Bagdad and is part of the Baghdad CDC office, within the Public Health Primary Health Care Directorate. The College of Medicine at Baghdad University will grant FETP graduates a High Diploma upon fulfilling the graduation requirement.

The long-term goal for the FETP is to be a fully funded and independent program within the Iraq MOH. It is anticipated that it will take between 5 and 7 years of sustained support and coordination to achieve this benchmark. Delineation of current partner roles and responsibilities is as follows:

Partner agency roles and responsibilities
MOH
- Nominate candidates for enrollment in the FETP
- Pay salaries for all residents and MOH mentors at the central and sub-national levels
- Provide access to surveillance systems and data
- Identify priority areas for residents' special projects
- Support all outbreak investigation and response activities conducted by residents
- Identify and provide oversight of residents' duties
- Provide administrative facilitation
- Assign and support a full-time FETP coordinator
- Provide office space for the residents at Baghdad CDC
- Establish a separate unit with the Directorate for Public Health and Primary Health Care for the FETP
- Provide accommodation and salaries for all residents during the 1st year of their centralized training and assignments in Baghdad, and during the 2nd year coursework that is conducted in Baghdad
- Ensure participation of residents in surveillance activities
- Provide financial and in-kind support for residents' 2-year special study projects and during the 2nd year field work in the governorates

MOHE
- Participation in selecting candidates
- Participation in supporting various didactic trainings, including financial support for two lecturers
- Technical support for field work (e.g., selecting suitable study designs and sampling, developing data collection tools, analyzing results, writing scientific papers, serving on thesis committees)
- Evaluation of students' performances in didactic training and publication
- Accreditation of the program and awarding of a Higher Diploma
- Participation in sponsoring the program
- In-kind facility and administrative support for the 3-month didactic training for all 1st year residents at the University of Baghdad

CDC-Atlanta (with financial support from ISEP)
- Provide expertise in FETP development and implementation, curriculum development, training and evaluation
- Provide multi-disciplinary technical assistance for current public health problems
- Provide financial support and supervision for the resident advisor and program advisor
- Link to other CDC subject matter experts to better support the MOH to address its public health priorities

- Mentor residents during their field work

Monitoring and evaluation activities
Monitoring and evaluation will entail two approaches:

1. **FETP implementation:** the following indicators will be used to evaluate the implementation of the 2-year training program:
- Allocation of the specific physical location for the FETP within the MOH
- Assignment of major staff to run the office and execute the program
- Number of MOH health officers engaged in mentoring and field supervision of residents
- Number of MOH health officers trained as mentors
- Number of Steering Committee meetings
- Number of FETP graduates per year
- Number of applicants for FETP per year
- Granting the graduates High Diplomas from the College of Medicine, Baghdad University

2. **Quality of graduates:** evaluation of achievement will be assessed through:
- Passing written and oral exams
- Number of outbreak investigations in which residents participated
- Submitting a written report describing a specific field work or outbreak investigation or addressing other acute health problems
- Submitting a written report on the design, implementation, or evaluation of a public health surveillance system; this report should include recommendations made by the resident and how they are to be implemented
- Submitting a report outlining a summary of all field activities that residents participated in during their training
- Number of manuscripts submitted or eligible to be submitted to a peer-reviewed journal for publication
- Number of conferences in which residents presented their work orally or as posters
- Number of training and mentoring activities/sessions residents planned and implemented
- Submitting a report on a health priority area in Iraq that describes the health problem, how to address it, existing or proposed surveillance system, intervention plan, and logic model, that could be used by the MOH to address the specific health issue

For monitoring FETP progress indicators, an Epi-Track prototype has been established and delivered to the Iraqis for immediate implementation by the program advisor. It will need to be tailored to track their specific indicators, a process that will be finalized in January 2010, during the visit of the Iraqi delegation to Atlanta.

In terms of impact on surveillance systems, residents in the 1st cohort will be encouraged to conduct assessments of existing systems as part of their course of study. This will establish a baseline, together with other studies conducted in Iraq, from which the FETP, in the future, can evaluate systems' improvement through its training of epidemiologists.✦

Mozambique FELTP

Program description
The Mozambique FELTP (M-FELTP) is yet to initiate but planning and activities are under development. It will be a 2-year full-time training program in applied epidemiology and public health laboratory practice. Scheduled to start in September 2010, the M-FELTP is intended to be a long-term ongoing program within the Mozambique Ministry of Health (MISAU) that continuously trains field epidemiology residents and public health laboratory residents for public health leadership positions at various levels within MISAU.

Current plans designate that FELTP graduates will receive a Master of Public Health with a specialization in Field Epidemiology or Public Health Laboratory Management upon satisfactory completion of the program. Residents will provide service to MISAU as a part of their training through strategic and specific field placements and assignments throughout the Mozambique public health system.

The program is conducted jointly between MISAU and the University Eduardo Mondlane (UEM). UEM is responsible for the academic component of the program, while MISAU is responsible for the practical component in the field. Within UEM, the program will be housed in the Microbiology Department in collaboration with the Department of Community Health. Within MISAU, the program will be located under the National Health Directorate in the Department of Epidemiology. Technical assistance will be provided by CDC, through the CDC Mozambique and CDC Atlanta offices.

Team members
- Peter Nsubuga, Team Lead
- Senia Espinosa, Health Education Specialist
- Ken Johnson, Public Health Advisor

Partners
- CDC partner: CDC Mozambique, Global AIDS Program
- Mozambique MISAU
- University Eduardo Mondlane

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Outbreak investigations and response (short course)	Potential first responders to an outbreak	Training took place over a 15-week period	26	After evaluation of the first short course, it was determined that the course may be too complex for future short course cohorts and more discussions and planning will need to occur to ensure that there is a clear understanding of ▪ Who MISAU wants trained in the short course and what roles they will play subsequently ▪ What level of identified topics would be appropriate for training with future short courses

Future plans
- Hold second Outbreak Investigation short course
- Sign MOU between partners
- Select residents for first cohort
- Initiate first cohort for FELTP
- Finalize decisions for field site locations
- Recruit a laboratory resident advisor✦

Rwanda FELTP

Program description
At the request of the Government of Rwanda (GOR) in 2008, CDC is planning and implementing an FELTP. The Rwanda FELTP is a 2-year full-time training program in applied epidemiology and public health laboratory practice, created to be a long-term ongoing program within the National MOH. It is intended to train field epidemiology residents, public health and veterinary laboratory residents, and veterinary field epidemiology residents for leadership positions in various levels of both the MOH and the Ministry of Agriculture and Animals (MOAA). Residents will provide service to the MOH, TRAC Plus, the National Reference Laboratory, District Hospitals and Health Services, as well as the Rwanda Animal Research Development Authority during their training through field placements.

The program is sponsored by the President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance is provided by CDC and AFENET.

Team members
Atlanta-based staff
- Peter Nsubuga, Team lead
- Eric Gogstad, Public Health Advisor
- Juliette Mannie, Management and Program Analyst
- Italia Rolle, Epidemiologist

Rwanda-based staff
Simon Antara, Resident Advisor

Partners
- CDC partners: CDC Rwanda
- AFENET
- National Reference Laboratory
- National University of Rwanda, School of Public Health
- Rwanda MOH
- Rwanda MOAA
- TRAC Plus

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Outbreak investigations	District health workers, primary healthcare workers	2 weeks	72	Two short courses were held in 2009 (March and July); participants attended 2 weeks of training before completing a field project

Future plans
The FELTP will officially begin in January 2010. Additional short courses will be planned during the year to increase the capacity of the public health workforce at the sub-national level to detect and respond to disease outbreaks.✦

West Africa FELTP

Program description
The West Africa FELTP (WAFELTP) is a 2-year regional in-service training program in applied epidemiology and public health laboratory practice, created to be a long-term ongoing program within the Multi Disease Surveillance Center (MDSC). The program will start in January 2010, enrolling 12 residents, 3 from each of the 4 participating countries (Burkina Faso, Mali, Niger and Togo).

The WAFELTP will train field epidemiology, public health laboratory, and veterinary residents for leadership positions in various levels of the MOH in their respective countries. During their time in the program, residents will provide service to their home MOH during their training through field placements. The program is sponsored by MDSC in partnership with the MOHs of Burkina Faso, Mali, Niger, and Togo, with technical assistance provided by CDC.

Although this regional program has begun with four member countries, the plan is to expand to include other Francophone countries throughout Africa through a phased-approach once the program is well-established.

The field epidemiology component will be similar to programs that have been established in more than 25 other countries and modeled after CDC's 2-year Epidemic Intelligence Service training. The public health laboratory training component will be based on CDC's Emerging Infections Program which is a 1-year applied laboratory training program. The didactic portion of the training will occur in Ouagadougou, Burkina Faso, and the field portion of the training will occur in the resident's country of origin.

Team members
Atlanta-based staff
- Peter Nsubuga, Team Lead
- Peter Edwards, Public Health Advisor
- Michele Evering-Watley, Instructional Designer

Burkina Faso-based staff
Ousmane Badolo, Program Coordinator

Partners
- AFENET
- MOHs in Burkina Faso, Mali, Niger, and Togo
- University of Ouagadougou
- USAID
- West African Health Organization
- WHO-AFRO/MDSC

Training

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Outbreak investigation short course	District and regional medical officers, surveillance officers, biologists and pharmacists	10 days	17	17 students from the short course presented mini-project reports. The presentations were facilitated by professors from the Universities of Ouagadougou and Togo, the Intercountry Veterinary Medical School of Dakar, the National Institute for Scientific Research of Mali, and the National Institute of Health Sciences of Bobo Dioulasso.

Training type/ title	Audience	Length	Number trained	Key outcomes or comments
Master FELTP planning workshop	Participants from WHO, MOH, universities, reference laboratory, referral hospitals, research institutes, AFENET, and veterinary schools from the four countries	2 days	About 25	▪ The objective was to update participants on the development process of the Master FELTP curriculum, reach a consensus on respective roles and responsibilities of stakeholders, and formulate recommendations for an adequate implementation of the curriculum in West Africa. ▪ Participants from WHO, MOH, universities, reference laboratory, referral hospitals, research Institutes, AFENET and veterinary schools from the four countries attended this planning workshop. ▪ FELTP historical background, the description of the master curriculum, selection criteria of trainees and facilitators, training materials and tools, field placement organization and roles and responsibilities of partners were discussed and agreed upon.

Future plans

- Forming a Regional Steering Committee
- Hiring a permanent resident advisor
- Mobilizing funds for the 2nd cohort of residents✦

Self-Sustained FETPs and FELTPs

Egypt FETP

Program description
The Egypt FETP (E-FETP) began in 1993 as a collaboration between the Egyptian MOH and CDC, with funding from the USAID Cairo mission. The goal of the E-FETP is to build epidemiologic capacity for the MOH and strengthen public health systems. The first CDC resident advisor worked with the E-FETP from 1993 to 1997.

During the past 16 years, E-FETP has strengthened the ability of the MOH to perform such core public health and applied epidemiology functions as disease surveillance, outbreak investigation, and rapid response. The E-FETP conducted numerous outbreak investigations, including Rift Valley fever, typhoid, tetanus, and human rabies. In 2003, the E-FETP conducted an environmental survey and identified an outbreak of lead toxicity due to contamination of flour in a grinding mill in a village in southern Egypt.

The E-FETP built partnerships among MOH, the Epidemiology and Surveillance Unit (ESU), USAID, CDC, WHO, the U.S. Naval Medical Research Unit No. 3 (NAMRU-3), and other partners in providing resources, technical assistance, and training to help train more than 90 highly skilled applied epidemiologists who currently perform many of the core functions of the MOH related to disease surveillance and outbreak investigation. These activities include developing a national electronic modifiable disease surveillance system, a Nile cruise boat inspection program, core and specialized epidemiologic training and other key activities, including the training of hundreds of physicians at the district health level in disease surveillance, applied epidemiology, and related skills.

In May 2000, the MOH established the ESU, responsible for disease surveillance, outbreak investigation and response, training, and other related activities. The E-FETP became a major organizational component of ESU. Many graduates and residents staff the key positions at ESU. In 2004, the Egyptian Board of Applied Epidemiology was established to provide training to physicians who are interested in public health careers. The program includes 2 years of FETP and 2 years of clinical rotation. The ESU conducted their first Behavioral Risk Factor Surveillance System (BRFSS) survey in 2004. After funding from USAID ended in 2005, CDC continued providing technical assistance to the E-FETP.

The E-FETP played a major role in the outbreak investigation of avian influenza since the first human H5N1 case was notified in February 2006. Of the 43 cases confirmed to date in Egypt, 19 have been fatal. The MOH has set up new rapid surveillance system and ESU staff have trained a large number of public health personnel at the governorate and district levels throughout Egypt.

Team members
- Bassam Jarrar, Team Lead
- Judy Berry, Program Analyst
- Michele Evering-Watley, Instructional Designer
- Hiari Imara, Public Health Advisor
- Tippavan Nagachinta, Medical Epidemiologist

Partners
- CDC partners: Global Disease Detection Program, International Emerging Infections Program
- Egypt MOH
- NAMRU-3

Contact information
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Strengthened public health workforce
To date, the program has graduated 82 medical epidemiologists (including 3 graduates from Sudan). A total of 27 physicians, veterinarians, and pharmacists are now in training (10 in the 1st year and 17 in the 2nd year). Most of the graduates (56) remain in Egypt helping meet the country's pub-

lic health needs. In 2009, the Egyptian Board of Applied Epidemiology was separated from E-FETP but graduates from E-FETP are eligible for the Board training program.

The E-FETP provides a career ladder for its graduates. Many graduates hold high positions within the MOH (director of the ESU and FETP coordinator), several are working with international organizations, including WHO and NAMRU-3.

Investigations and surveillance project activities in 2009
Avian influenza and H1N1 outbreak investigations are ongoing.

Other projects or programs conducted in 2009
- A 2-year curriculum was revised
- Four abstracts were accepted for oral presentations at the 4th TEPHINET Regional Scientific Conference in Amman, Jordan, October 19–22
- A total of 17 candidates from the Department of Infectious Control Program were selected for the 14th cohort
- In December, 10 candidates were selected for the 15th cohort
- To strengthen public health capacity in epidemiology and surveillance, the E-FETP conducted a 2-week short course training in collaboration with IEIP for medical officers serving the Department of Communicable Diseases. The plan is to conduct short course trainings in all 29 governorates.
- Five epidemiological field studies were designed and finalized:
  - Prevalence of Hepatitis B infection in pregnant women in selected governorates, Egypt, September 2009–May 2010
  - Effects of anti-retroviral treatment on CD4 count among Egyptian AIDS patients, January 2005–August 2009
  - Seroconversion of Hepatitis C viral infection at governmental haemodialysis units among isolated and non-isolated patients, Egypt, 2007–2009
  - Avian influenza infection among vaccinated and non-vaccinated bird flocks, Egypt, 2007–2009
  - Appropriateness of antibiotics use among inpatients admitted to selected hospitals, Egypt, December 2009–May 2010

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
Basic epidemiology course	Medical officers from Governorate offices	2 weeks	250	A joint training program with IEIP
Influenza H1N1 training	Health officer in the Governorates	2 days	150	ESU and FETP staffs provided this training around the country

Status of program independence and sustainability
From the establishment of the ESU in 2000, the MOH allocated its annual funding in a line item of the national budget towards institutionalization and sustainability of the E-FETP.

Monitoring and evaluation activities
In March 2003, a team from CDC and TEPHINET conducted a program evaluation of the E-FETP. The goal of the evaluation was to provide the MOH and its partners with information and recommendations that are useful in setting priorities to improve the E-FETP both in terms of the quality of the training and the service the E-FETP provides to public health in Egypt.✦

Ghana FELTP

Program description
The University of Ghana School of Public Health (SPH) was established in 1994 which belonged to a network of African Public Health Schools without Walls (PHSWOW). In October 2007, the first cohort of FELTP residents was accepted which unofficially launched Ghana's FELTP. The primary objectives of the school are to respond to the professional manpower needs of the MOH, address the numerous existing and emerging healthcare challenges facing the country, and train a wide range of public health professionals.

The SPH is currently awarding a Master of Public Health in Philosophy in Applied Epidemiology and Disease Control (MPhil) to graduates of Ghana's FELTP. This program began in October of 2007 as an outgrowth of previous assistance with applied epidemiology training.

Team members
Atlanta-based staff
- Peter Nsubuga, Team Lead
- Michele Evering-Watley, Instructional Designer
- Andrew Weathers, Public Health Advisor

Ghana-based staff
Chima Ohuabunwo, Resident Advisor

Contact information
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Partners
- AFENET
- Ghana Health Services (GHS)/Ghana MOH
- Ghana Ministry of Food and Agriculture, Veterinary Service Division
- University of Ghana SPH
- UN Foundation
- USAID

Cohort information
- Current number of trainees for cohort 1: 5
- Current number of trainees for cohort 2: 8
- Current number of trainees for cohort 3: 7
- Total number of graduates as of 2009: 2 residents have been upgraded to undertake a PhD; they should complete it in 2010; 3 residents requested deferment and will complete in 2010

Position of residents in health system as of December 31, 2009
- Deputy Program Director for Non-Communicable Diseases, Public Health Division, GHS (1st cohort)
- Deputy Program Manager for Malaria Control Program, Public Health Division, GHS (1st cohort)
- Deputy Laboratory Director, Public Health Reference Lab, GHS (1st cohort)

Investigations and surveillance project activities in 2009
- Evaluated surveillance systems for several diseases with recommendations for improvement including:
  - HIV/AIDS surveillance system
  - National TB surveillance
  - Yellow fever surveillance system
  - Buruli ulcer surveillance system
- Conducted secondary data analysis for disease control programs with recommendations leading to public health actions
  - Rabies management information system in the Eastern region
  - HIV lab tests and sero-prevalence at the national public health reference lab
  - Acute flaccid paralysis (AFP) surveillance and wild polio isolation in Eastern region

Other projects or programs conducted in 2009

- Residents have led investigations of disease outbreaks at district levels:
  - Influenza-like illness at a high school, Eastern region
  - Meningitis outbreak, Asante Akim District
  - Foodborne outbreak, Berekum, Brong-Ahafo region
- In November, the FELTP was involved in the National Technical Coordination Committee launch of the National H1N1 awareness/prevention campaign and the investigation of an outbreak at an international school in Accra. A total of 16 H1N1 cases were confirmed among students and staff in under 2 weeks. The situation was addressed with the use of adequate case containment, including Tamiflu administration, temporary class suspension, and contact follow-up and testing and or treatment. As of November 18, there were 37 confirmed H1N1 cases, 258 suspected cases and no confirmed H1N1 deaths in Ghana.
- Residents conducted secondary data analyses for disease control programs with recommendations leading to public health action (or plan for action) for:
  - HIV lab tests and sero-prevalence at the national public health reference lab
  - AFP surveillance and wild polio isolation in Eastern region
  - Urine microscopy and antibiotics sensitivity pattern at a large regional hospital
  - Yaws prevalence study in the Brong-Ahafo region
  - Cysticercosis and clinical epilepsy in the Upper West region
  - Bovine TB surveillance in the Volta region

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
African regional training on improving management for public health intervention	▪ District health directors ▪ District hospital superintendents ▪ Medical epidemiologists from the MOH	4 weeks with a 3-month project	22	22 operational field works projects concluded and presented. Training conducted in collaboration with FELTP and SMDP
Hosted multi-agency supported West African sub-regional workshop on strengthening FELTP (in WA Sub region)	▪ Partners agency's staff ▪ Veterinarians from Ministry of Agriculture ▪ Laboratory scientists ▪ Academic scholars	1 week	50–60	Development of the "Accra Declaration" for strengthening zoonotic disease surveillance and management
Residents facilitated training activities at regional and district levels (e.g. H1N1 preparedness)	▪ Multiple regional and district health workers	2 days per region	10–20 per region	Training conducted in collaboration with the GHS team

Other accomplishments

- Placement of a resident advisor in country
- Strengthening of field training via on-site mentoring by resident advisor and field coordinators (Veterinary Service Directorate and GHS)
- Strengthening of Ghana's public health workforce
- Strengthening of the disease surveillance and response capacity
- Standard MOU developed among key partners for FELTP
- FELTP supported GHS collaboration with IANPHI by providing technical support
- FELTP is part of the Ghana national technical committee for emergency preparedness and response

Status of program independence and sustainability

There is increased participation from GHS and Veterinary Services Division with a standing commitment to pay residents' salaries while they are in the program. Support is also provided for some field activities (i.e., outbreak investigations, transport and logistics provided).

Monitoring and evaluation activities

EpiTrack database tracks residents' activities; alumni activities are analyzed and reviewed periodically.

Outcomes

- Improved investigation and documentation of outbreaks
- Improved surveillance programs
- Creation of the "Accra Declaration" for strengthening zoonotic disease surveillance and management
- Improved capacity to manage health events/emergency investigations✦

Jordan FETP

Program description
The Jordan FETP began in November 1998 with the arrival of the first resident advisor. It went through three different phases; the name of the program changed with each phase to reflect its expanding scope.

Phase I (November 1998–October 2001)
Known as the Jordan Data for Decision Making Project, it focused on improving the use of data at all levels of the MOH. Two main applied public health training programs were started: the FETP and the Data for Decision Making (DDM) program. Efforts to improve the collection, analysis, and response to surveillance data were initiated.

Phase II (October 2001–September 2004)
Known as the Jordan Surveillance Project (JSP), it represented an expansion of the project and a name change to reflect that. During this phase, JSP continued to build capacity for the MOH through FETP and DDM activities and strengthened the communicable disease surveillance system. The Mortality Surveillance and the Behavioral Risk Factors Surveillance System (BRFSS) were initiated to provide data on the main causes of death and to measure the behavioral risk factors that contributed to non-communicable diseases.

Phase III (October 2004–September 2008)
Known as the Jordan Applied Epidemiology Project (JAEP), it focused on sustainability and the applied nature of the work. JAEP focused on strengthening the surveillance of communicable and non-communicable diseases, including mortality surveillance and BRFSS. FETP and DDM continued to represent strategies to improve human capacity in the MOH and graduates of the training programs supported the projects and priority efforts of the MOH in strengthening existing systems and developing new ones.

In 2008, JAEP moved forward in institutionalizing its functions, a cooperative agreement was put in place and funded, and the resident advisor departed in May of that year. The program is now fully institutionalized and training epidemiologists from neighboring countries.

Team members
Atlanta-based staff
- Bassam Jarrar, Team Lead
- Judy Berry, Program Analyst
- Senia Espinosa, Health Education Specialist

Jordan-based staff
Raja Haddadin, FETP Director

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Partners
- CDC partners: National Center for Chronic Disease Prevention and Health Promotion, National Center for Health Statistics
- Jordan MOH
- Jordan University for Science and Technology
- USAID Jordan mission
- WHO Iraq Office
- Yemeni MOH

Cohort information
- Current number of trainees for cohort 8: 7 (includes 3 from Yemen)
- Current number of trainees for cohort 9: 0
- Total number of graduates as of 2009: 38

Strengthened public health workforce

The program had seven 1st year residents in 2009, three of them are from the Yemeni MOH. There are 42 graduates including 37 from Jordan, 2 from the Palestinian territories, and 3 from Iraq. Thirty three of the Jordanian graduates are working at the Jordan MOH. All of the Palestinians and the Iraqis are working at the MOH in their respective countries. Two of the 2009 graduates were veterinarians. One graduate is working as the FETP coordinator.

Investigations and surveillance project activities in 2009

- Number of outbreak or emergency investigations conducted and completed: 9
- Number of planned (protocol-based) studies conducted and completed: 4
- Number of surveillance analyses conducted: 5 in addition to the routine weekly analysis of notifiable diseases data

Other projects or programs conducted in 2009

FETP residents have a 2-week to 2-month rotation at various departments of the MOH: Immunization, Non-communicable Diseases, Surveillance, Zoonotic Disease, Malaria and Bilharzias Departments, and the STD/HIV Control Program.

Training

Training type/title	Audience	Length	Number trained	Key outcomes or comments
H1N1 education	MOH, health workers, schools, universities, and communities	2–3 hour sessions	500+	Increased awareness of symptoms and prevention of H1N1
Foodborne disease and food poisoning workshop	MOH and FDA staff	1 week	25	—
Diarrheal diseases and typhoid workshop	Iraqi MOH staff	2 days	35	—

Status of program independence and sustainability

The FETP is a fully sustained program within the Directorate of Primary Health Care. It has played a regional role by training epidemiologists from Palestine, Iraq, and Yemen. There are plans to train more Yemenis and Syrian epidemiologist. The FETP is a founding member of EMPHNET, a regional network of FETPs.

Monitoring and evaluation activities

Residents have regular meetings with their supervisors. The FETP is planning to work with EMPHNET to implement EpiTrack and other monitoring and evaluation activities for the region.✦

Thailand FETP

Program description
In 1980, the Thailand Ministry of Public Health (MOPH), in collaboration with WHO and CDC, established the first FETP in Southeast Asia. After 30 years, the program is sustained by financial and managerial support from the Thailand MOPH, CDC, WHO and USAID. In 1998, the program expanded its capacity by offering traineeships to the neighboring countries of Cambodia, Laos, Malaysia, Myanmar, Southern China, and Vietnam. In 2001, WHO designated the program as a WHO Collaborating Center.

Since its inception, the program has investigated many high priority disease outbreaks. For example, FETP residents played a key role in the response to the HIV/AIDS epidemic since the first case of AIDS was diagnosed in Thailand in 1987. The AIDS-related surveillance activities conducted by FETP residents led to the creation of the CDC and Thailand MOPH HIV/AIDS collaboration in 1990. Recent examples of the program's ability to detect and respond to emerging diseases and public health threats are the SARS outbreak, the tsunami disaster, avian influenza, and the ongoing H1N1 influenza outbreaks. The FETP led the initiation of new surveillance strategies to rapidly detect emerging diseases and health threats by setting up and training over 1,000 Surveillance and Rapid Response Teams (SRRT) throughout the country.

In response to the International Health Regulation, the 2004 tsunami, and avian influenza, the MOPH increased the number of Thai FETP residents and international residents. To assist with the additional residents and at the request of the MOPH, CDC assigned a resident advisor to Thailand in June 2006 to help the program enhance the quality of the field training, strengthen its international mentoring component, and assist with the development of new FETPs in Southeast Asia.

In January 2008, the FETP organized a meeting attended by regional country partners, representatives from the Mekong Basin Disease Surveillance (MBDS), the Asian Development Bank, WHO, and CDC. The goal of the meeting was to initiate a regional network in South East Asia. TIGER (The International Group of Epidemiology and Response) was established with a goal to improve the capacity to conduct disease surveillance and respond, investigate, and control disease outbreaks that occur in southeast Asian countries. The resident advisor is a member of the TIGER steering committee and is involved in oversight of their activities. To increase rapid response capacity for each country in the network, a web-based publication called OSIR (*Outbreak and Surveillance Investigation Report*) was established in December 2008 to encourage and facilitate communication of public health information and disease reporting in Asia. OSIR receives scientific articles from country members in the region and is published quarterly.

In August 2009, TIGER was incorporated in Manila, Philippines, under a new name: South Asia Epidemiology and Technology Network Inc. (SAFETYNET). SAFETYNET works with TEPHINET to provide technical support to a larger number of countries in its region.

In September 2008, the first coordination meeting on the development of a 2-year international FETP for veterinarians (FETP-V) was organized by the FETP and the Division of Livestock Development (DLD), Thailand Ministry of Agriculture (MOA). This collaborative training project is supported by the MOPH, the MOA, the Food and Agriculture Organization (FAO), and USAID. The meeting generated the vision, goal, and objectives, and an FETP-V curriculum. FETP-V is a collaborative effort to share resources with the Faculty of Veterinary Medicine from six universities (Mahidol, Kasetsart, Chiang Mai, Chulalongkorn, Khonkhaen, and Songkla-Nakarin). The program also created a sustainability plan. The 1st cohort of six international FETP-V residents started in June 2009. Trainees spend their 1st year with FETP residents and receive field training from DLD staff. CDC provides support and assistance in curriculum development for new FETP-V training and field assignments.

Team members

Atlanta-based staff

- Tippavan Nagachinta, Team Lead
- Hiari Imara, Public Health Advisor
- Senia Espinosa, Instructional Designer
- Judy Berry, Program Analyst

Thailand-based staff

Alden Henderson, Resident Advisor

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Partners

Government agencies

- Agriculture and Cooperatives, Department of Livestock Development
- National Parks and Wildlife
- Thai MOPH US CDC Collaboration
- USAID
- USG Thailand

International Organizations

- WHO: SEARO and WPRO
- FAO

Regional Networks

- ACMECS
- MBDS
- ASEAN + 3 [Ayeyawady-Chao Phraya-Mekong Economic Cooperation Strategy/Association of Southeast Asian]
- TEPHINET
- SAFETYNET

Epidemiology training programs

- Vietnam
- Laos
- Cambodia
- Singapore
- Malaysia
- Colorado State University, College of Veterinary Medicine and Biological Science
- USDA, APHIS

Number of residents and graduates

To date, the Thai FETP has graduated 148 field epidemiologists from Thailand and 31 from neighboring countries. The program expanded from 5 trainees in its first cohort to 7 in the 13th cohort and to 12 in the 27th cohort.

The program currently has 23 residents (9 first year and 11 second year); four are from Cambodia, Vietnam, Malaysia, and Southern China. The majority (78%) of graduates still work at the MOPH.

Investigations and surveillance project activities in 2009

- H1N1 outbreaks in schools, military bases, prisons, temples, and hospitals
- Re-emergence of chikungunya and its spread from southern to central Thailand
- Re-emergence and endemicity of cholera in southern Thailand
- Pseudomonas aeruginosa causing a nosocomial infection of endophthalmitis
- Occurrence of mumps in schools and university students

Training

- Informal information (1 day)
- Applied communication (1 day)
- GIS and rapid response (4 days)

- Logistic regression (3 days)
- Scientific writing (2 days)
- Nosocomial infection (3 days)

Accomplishments

Regional accomplishments

- Expand into veterinary epidemiology
- Publish scientific communications, electronic journal has articles on outbreaks, investigations, and surveillance evaluations
- Support other field epidemiology trainings
- Evaluate the surveillance of pneumonia in two provinces bordering Lao and Thailand

Challenges

For the Thai FETP

- Coordination between residents and local health departments
- Provincial health offices prefer assistance from FETP staff rather than residents
- Health professionals requesting training in field epidemiology
- SRRT staff stature higher than "residents"
- Responding to public health treats that cross international borders

For regional programs

- Recognition of training program
- SAFETYNET
- Mentors
- Collaborations between human and animal sectors

Future plans

- Strengthen new applied epidemiology training programs in the region
- Foster cross-border investigations
- Strengthen collaboration between Departments of Health and Veterinary Services
- Collaborate with regional networks
- Strengthen scientific communications
- Collaborate with RESPOND✦

Management Capacity Building Programs

AFENET Ghana

Program description
In 2007, SMDP undertook a partnership with the African Field Epidemiology Network (AFENET) and the University of Ghana School of Public Health (UG) to employ multiple strategies for the strengthening of public health management competency in Africa. A keystone of the strategy is the establishment of a regional Centre for Improving Management for Public Health Intervention Programs, based at UG. This centre will be open, but not limited, to AFENET member countries.

Team members
- Denise Traicoff, Team Lead
- John Marsh, Senior Management Development Consultant

Program data

Start date	2007
Institutional counterparts	UG Ghana Health Services AFENET
Date in-country training started	June 2009
Target audience	▪ District managers, public health offices ▪ Hospital directors ▪ Mid-level program managers

Division activities

	2009	Cumulative
MIPH graduates	0	7
Technical assistance visits	3	5
Completed cycles in-country training	1	1
In-country managers trained	22	22
Number of completed applied management improvement projects	22	22

Accomplishments and outcomes in 2009
- Finalizing the curriculum and developing a detailed course schedule
- Identified mentors for program participants
- Accreditation through UG, awarding continuing education credits to successful participants

The inaugural course, Improving Management of Public Health Interventions, was launched in June, with 22 participants, including 19 from Ghana and one each from Kenya, Tanzania, and Uganda. This course included site visits and participants worked on developing a project plan for a management project to implement on returning to their workplace. Participant returned to the University in November 2009 to present the results of their work and to participate in a graduation ceremony.

CDC provided technical assistance in curriculum development, program design and evaluation, and assisted with course instruction. Additional faculty were from UG, UG School of Business Administration, Ghana Health Services, the Ghana Institute of Management and Public Administration, and AFENET.

Program independence and sustainability
The program will ensure sustainability by
- Focusing on a regional need identified in partnership with WHO
- Concentrating on applied learning and adult learning techniques
- Remaining aligned with AFENET and with the Africa Leadership and Management Network
- Accreditation of the program through UG

Monitoring and evaluation activities

Expected outcomes from the program are a workforce that is more results-oriented, more proactive at addressing public health challenges and more oriented toward using data to make decisions that improve public health services.

Examples of expected outcomes would be improved hiring decisions, more effective advocacy of technical programs, stronger culture of leadership and leading change, and more frequent and higher quality health problem analyses.

Evaluations were conducted throughout the course at multiple levels. For participant satisfaction, class surveys and focus groups were conducted. To evaluate learning, exercises, field site visits and class presentations were conducted. A final course project was assigned to evaluate application of skills; and an evaluation of behavior change on the job is planned for early 2010. The next course is scheduled for June 2011.✦

Azerbaijan and Georgia

Program description
The U.S. Department of Defense's Defense Threat Reduction Agency (DOD/DTRA) is implementing the Threat Agent Detection and Response (TADR) program to strengthen the public health surveillance system in former Soviet countries, with an emphasis on especially dangerous pathogens (EDPs). Countries included are Georgia, Azerbaijan, and Armenia of the South Caucasus region, and Kazakhstan, Uzbekistan and Ukraine in Central Asia. As part of the project, DTRA is providing assistance to partner countries in infrastructure and technical capacity in support of surveillance activities in both the human and veterinary sectors. In collaboration with DTRA, CDC has been providing technical assistance and support in laboratory network, strategic planning, quality system, management and leadership, and epidemiology.

The CDC team brings together expertise from the FELTP and SMDP and the Laboratory Systems Development Branch (LSDB) of the Division of Laboratory Systems (DLS).

The integrated CDC team is currently working with Georgia, Azerbaijan, and Armenia to
- Build organizational and systems capacity to ensure the highest quality of laboratory practices, information, personnel competencies and the effectiveness of the laboratory-based surveillance system as a whole
- Enhance workforce capacity and competency by building managerial skills and subject matter expertise for pathogens of interest to DTRA
- Improve surveillance, laboratory practice and epidemic investigation skills for epidemiologists, veterinarians and laboratory experts by providing a long-term framework and developing competencies among selected scientists that prepare them for applied work in field epidemiology

Team members
LSDB personnel
- Mark Rayfield, Chief, LSDB, Team Lead
- Adilya Albetkova, Health Scientist
- Pawan Angra, Health Scientist
- Carol Fridlund, Health Scientist
- Sharon Granade, Health Scientist
- Artur Ramos, Biologist
- Celine Taboy, Health Scientist

SMDP personnel
- Brian Robie, Team Lead
- Sara Clements, Public Health Advisor
- Antoinette Seright, Public Health Management Specialist

Accomplishments and outcomes
- CDC staff participated in a collaborative gap analysis/assessment and an introductory workshop in Georgia to provide laboratory quality management systems (QMS) training to 24 Georgian and 4 Azeri laboratory leaders and managers
- Two-week QMS/Project Management (PM) workshops were delivered in both Azerbaijan (20 participants) and Georgia (27 participants) in 2008–2009. The workshop topics included:
  - A description of a systematic approach to quality for laboratory services, namely the establishment of a laboratory QMS
  - Discussion and activities related to human and animal surveillance systems
  - PM 10-step methodology using interactive tools targeted towards laboratory system improvement
- As a follow-up to the QMS/PM workshop, selected participants were assigned to use the technical knowledge, tools, and skills they acquired to plan and implement projects aimed at strengthening the Georgian national laboratory network and surveillance system. These projects

include
- Implementation of a laboratory internal audit/self assessment
- Development of a proficiency testing program
- Strategic planning and occupancy of the CRL
- Roll-out of QMS training to all NCDC laboratories
- Development of TADR Standard Operating Procedure (SOP) adaptation at the facility level and development of core documents (e.g., quality manual) to be adapted for QMS implementation
- Implementation for QMS implementation to all LMA laboratories

Regular mentoring and country visits are used to ensure successful completion of the projects. A 2-day Donor Workshop was organized in Georgia to bring together donor organizations and implementing partners to discuss strengthening the public health system; identify the main barriers to implementation, coordination and collaboration of donor programs; and determine a way forward to a more holistic approach to system strengthening.

Program data

Start date	▪ Georgia: 2008 ▪ Azerbaijan: 2009
Institutional counterparts	Both Georgia and Azerbaijan: ▪ US Department of State/Biosecurity Engagement Program ▪ DOD/DTRA ▪ HHS/Office of Global Health Affairs Georgia: ▪ Georgia Ministries of Health and Agriculture ▪ Georgia National Center for Disease Control and Public Health Azerbaijan: ▪ Azerbaijan Ministries of Agriculture, Health, and Defense
Date in-country training started	▪ Georgia: April 2008 ▪ Azerbaijan: October 2009
Target audience	▪ Laboratory managers ▪ Epidemiologists

Division activities

	2009	Cumulative
MIPH graduates	▪ Georgia: 0 ▪ Azerbaijan: 0	▪ Georgia: 3 ▪ Azerbaijan: 1
Technical assistance visits	▪ Georgia: 2 ▪ Azerbaijan: 2	▪ Georgia: 4 ▪ Azerbaijan: 3
Completed cycles in-country training	▪ Georgia: 1 ▪ Azerbaijan: 1	▪ Georgia: 1 ▪ Azerbaijan: 1
In-country managers trained	▪ Georgia: 27 ▪ Azerbaijan: 20	▪ Georgia: 27 ▪ Azerbaijan: 20
Number of completed applied management improvement projects	▪ Georgia: 0 ▪ Azerbaijan: 0	▪ Georgia: 0 ▪ Azerbaijan: 0

Program independence and sustainability

The following activities reflect a high likelihood of sustainability for programs in Georgia and Azerbaijan:
- Coordinating how the human and veterinary surveillance systems integrate into a national laboratory network that can detect disease outbreaks
- Incorporating a QMS approach into laboratory strategy
- Developing improved communication networks among the various laboratory system components
- Holding stakeholder meetings which provide opportunities for MOH and NGO officials to communicate, develop coordinated working arrangements, and prepare synergistic action plans to achieve country public health objectives
- Incorporating a management capacity building program staffed by in-country professionals who

can conduct ongoing MOH training and mentoring activities in Georgia and Azerbaijan

Monitoring and evaluation activities

A key measurement/evaluation indicator in Georgia and Azerbaijan at this stage is the number of laboratory managers and teams completing QMS/PM workshops as an aid to establishing and improving QMS in their laboratories or the laboratory system (Georgia and Azerbaijan).

For more information on these country activities, see the South Caucasus FELTP section under "Division-supported FETPs and FELTPs."✦

Botswana

Program description
In 2008, the HIV prevalence rate for Botswana was 17.6% nationally and 25% among adults ages 15 to 49. Initial findings from 2009 data indicate a prevalence rate of 32.5% among pregnant women. Tuberculosis and malaria are among other major public health problems.

To address health problems like these, Botswana has established a public health management capacity building program. SMDP's partners in Botswana include BOTUSA, a collaborative effort between CDC-GAP and the government of Botswana to combat HIV/AIDS, and the Institute of Development Management (IDM), a regional non-governmental organization that conducts training and research in Botswana, Lesotho, and Swaziland. In 2003, with five graduates from the CDC Management for International Public Health (MIPH) course, BOTUSA, CDC Atlanta, and IDM launched the Botswana management capacity building program. This collaboration receives funding from PEPFAR, technical assistance from SMDP, implementation assistance from IDM, and leadership from the Ministry of Local Government (MLG).

The program's purpose is to enhance organizational performance in HIV/AIDS programs and services by strengthening the leadership and management skills of mid-level public health managers in the public, private, and non-government sectors. Specifically, the program has helped HIV/AIDS program managers learn and apply planning and process improvement tools to improve the effectiveness and efficiency of HIV/AIDS operations at the clinic and district levels.

Team members
- Libby Howze, Team Lead
- Sara Clements, Public Health Advisor

Program data

Start date	September 2001
Institutional counterparts	▪ MOH ▪ MLG ▪ IDM ▪ BOTUSA
Date in-country training started	June 2003
Target audience	Health program managers

Division activities

	2009	Cumulative
MIPH graduates	0	18
Technical assistance visits	2	14
Completed cycles in-country training	1	9
In-country managers trained	17	182
Number of completed applied management improvement projects	17	131

Accomplishments and outcomes
- The IDM team and the Kgatleng District Council Botswana were awarded 3rd place in the 2009 international MSH Leadership and Management Award competition for their Botswana/SMDP process improvement project that led to improved access to essential drugs from 48% to 80% in five clinics in the district
- The Botswana/SMDP received preliminary accreditation from the Botswana Training Authority (BOTA) as a Level 3 Certificate in Applied Public Health Management with academic credits that are accepted throughout the SADC region

- Trained the 1st cohort of participants for program planning and management course, training 17 community health nurses from districts across Botswana
- Implemented a team building workshop for 100 Botswana/SMDP program graduates at the Botswana Alumni Conference
- Developed a plan for implementation of a collaborative concept, to scale up best practices in district TB process improvements at a national level
- Process improvement projects implemented at the district level led to the following results in 2009:
  - The percentage of abortion patients at Princess Marina Hospital screened for HIV/AIDS increased from 37% to 73% from April 2008 to October 2009.
  - From September, 2009 to January, 2010 the percentage of patients at Masunga and Tati Clinics offered routine HIV testing increased from 18.2% (1,281/14,048) to 65.4%.
  - From July 2009-December 2009, average patient waiting time at Selibe-Phikwe Government Hospital Infectious Disease Care Center decreased from 1 hour 47 minutes to 1 hour 14 minutes.
  - The percentage of Sexual Reproductive Health Clinic clients receiving pap smears in Kang increased from 4.8% (124) to 53% from June – September, 2009.
  - From July, 2009 – September, 2009 the percentage of smear positive TB patients at Mahalype District Hospital who had their contacts traced increased from 1.8% (1/55) to 56.7% (34/60).

Program independence and sustainability

CDC and Botswana have a strong working relationship. An institutional home, which enjoys high-level support from the MLG, has been in place since 2003. Now, with sufficient training and managerial capacity in place across many districts and senior MLG management in Botswana, the program is well positioned in 2010 to undertake a major health initiative focused on TB, a national disease priority. The integration of all MLG health programs into the MOH will be effective in April 2010. Botswana, which is dependent on the diamond trade to fund many of its infrastructure development programs, has been hit hard by the global recession, a situation which consequently affects various public health programs. A challenge for 2010 will be negotiating the major shift in governmental structure within Botswana mentioned above as well as funding and human resource challenges.

Monitoring and evaluation activities in 2009

Data to be collected include

- Number and percentage of completed Process Improvement and Program Planning and Management projects
- Number and percentage of completed projects having a positive impact on targeted outcomes
- Number of trainers trained to deliver Process Improvement and Program Planning and Management workshops and to mentor teams' applied management improvement projects
- Documentation of design and pilot results of new dissemination and networking strategies in priority technical areas of TB control programs
- Number and percentage of improved TB control work processes from pilot process improvement projects with positive outcomes through collaborative implementation
- Finalization of IDM efforts to obtain program accreditation from BOTA and documentation of credited graduates from course modules in Applied Public Health Management✦

Ethiopia

Program description
Ethiopia is a culturally diverse country with an estimated 74 million people. It has a high burden of HIV/AIDS, with recent studies estimating between 1 and 2.6 million people infected. PEPFAR 2008 data shows that coverage of HIV counseling and testing among pregnant women is the lowest among 15 PEPFAR countries due in part to low use of prenatal care services in Ethiopia. The Ethiopian Government is working to improve all aspects of its public health services and systems, including its HIV/AIDS programs.

The Ethiopian Public Health Management Capacity Building Program was established in 2001 with a goal of improving the speed of antiretroviral therapy (ART) scale-up and the quality of HIV/AIDS care and treatment in support of Federal MOH and PEPFAR objectives. Since 2004, CDC Ethiopia has sponsored attendance at the CDC Management for International Public Health (MIPH) course for nine participants from the following partner organizations: CDC Ethiopia, Ethiopian Health and Nutrition Institute (EHNRI), Ethiopian Public Health Association (EPHA), Oromiya Regional (ORHB) Health Bureau of the FMOH, and Jhpiego, Ethiopia.

To help Ethiopian public health programs achieve their objectives, SMDP has been assisting MIPH graduates as they assist public health teams learning process improvement tools and using them to improve work processes. Teams to date have been from reference and hospital laboratories, Prevention of Mother to Child Transmission (PMTCT) offices in the Oromia region, and HIV/AIDS Prevention and Control Office (HAPCO) offices.

Team members
Brian Robie, Team Lead

Program data

Start date	November 2006
Institutional counterparts	▪ EHNRI ▪ EPHA ▪ ORHB ▪ Jhpiego Ethiopia ▪ CDC Ethiopia
Date in-country training started	March 2008
Target audience	▪ Laboratory managers ▪ HIV/AIDS Prevention and Control Office managers ▪ PMTCT managers and staff

Division activities

	2009	Cumulative
MIPH graduates	0	10
Technical assistance visits	3	5
Completed cycles in-country training	2	3
In-country managers trained	102	126
Number of completed applied management improvement projects	16	16

Accomplishments and outcomes
Building the process improvement skills of
- 16 regional and big hospital laboratory managers and EHNRI lab quality officers
- 21 regional managers of HIV/AIDS HAPCO and Regional Health Bureaus managers
- 65 PMTCT participants working in teams from 12 zones in the Oromia region on Process Improvement (in 2 cohorts)

All 7 PMTCT teams from the 1st cohort reported results at a November 2009 review. Examples of improved public health outcomes included increasing the percentage of

- Hospital deliveries of HIV positive women at Shashamene Referral Hospital from 59% to 85%
- HIV positive women having their CD4 counts tested at Asella Hospital and Asella Health Center from 42% to 90%
- Antenatal care (ANC) clients provided with HIV counseling and testing at Ambo Hospital from 60% to 100%
- Pregnant women's partners tested for HIV/AIDS at Fiche Hospital from 13% to 51%
- Pregnant women's partners tested for HIV/AIDS at Guracha Health Center from 10% to 57%
- ANC clients attending institutional delivery at Adama Health Center from 23% to 56%

Eleven of 16 laboratory teams had completed projects and presented results at a November 2009 review. Improved health outcomes included

- Reducing waiting time for CD4 results from 2 days to 1 day
- Reducing lab turnaround time for hematology results from an average of 5.5 hours to 1 hour in 95% of cases
- Increasing lab service requests with all necessary information completed from 40% to 99%
- Zones in Western Oromia collecting slides for re-checking TB microscopy from 14% to 71%

SMDP worked with EPHA officials to determine possible avenues for collaboration on management capacity building for the Ethiopian Leadership for Strategic Information course, and shared SMDP curriculum materials with EPHA staff as a follow-up.

Program independence and sustainability

To strengthen laboratory and PMTCT systems on a large scale, stakeholders are working to standardize results at worksites that have achieved improvements, and to replicate redesigned or enhanced processes for improved results at other worksites.

A train-the-trainer workshop will be conducted in September 2010 to train laboratory and PMTCT trainers to deliver Process Improvement (PI) workshops and to mentor teams' applied management improvement projects. These trainers from EHNRI and ORHB will enable programs at these institutions to operate independently.

Monitoring and evaluation activities

M&E measures in place for 2010:

- Number and percentage of completed PI projects
- Number and percentage of completed projects having a positive impact on targeted outcomes
- Number and percentage of improved work processes from PI projects with positive outcomes standardized for long-term sustainability at the original worksite
- Number and percentage of improved work processes from PI projects with positive outcomes replicated in other sites across the region
- Number of trainers trained to deliver PI workshop and to mentor teams' applied management improvement projects✦

Malawi

Program description
SMDP is working with the Malawi MOH, the Malawi AIDS Counseling and Resource Organization (MACRO), the Malawi College of Medicine (COM), and GAP Malawi to improve public health management capacity in Malawi. From the management capacity-building program's establishment in 2003 until 2006, management training for program managers from the MOH National TB Programme (NTP) and MACRO focused primarily on quality improvement. Through 2006, 137 public health program managers completed quality improvement training and, working with teams they recruited at their worksites, also completed 39 applied management improvement projects to improve organizational effectiveness.

Based on recommendations made at a May 2006 stakeholder meeting led by the MOH's Director of Technical Support Health Services, graduates of the CDC Management for International Public Health (MIPH) course provided program planning and budgeting workshops with follow-up applied management improvement projects for the District Health Management Teams (DHMTs). DHMTs from all districts in Malawi have participated. The goal was to help them develop skills needed to complete Malawi's District Implementation Plan (DIP) decentralized planning process, using SMDP's Healthy Plan-it™ program as curriculum.

A national steering committee of key stakeholders was established in 2008. The committee, co-chaired by staff from the MOH and Malawi COM, is comprised of members from HIV/AIDS NGOs, academic institutions, private sector, and development partners. The committee is responsible for overseeing the work of the Malawi management capacity building program.

The Malawi Management Capacity Building Program is now operating with minimal SMDP technical assistance, with the active engagement of about six MIPH in-country graduates and with support from the MOH and GAP Malawi. The program is coordinated through its institutional home at the Malawi College of Management (COM).

Current activities in Malawi include a fellowship program designed to prepare leaders to take key positions in the MOH and NGOs in Malawi, and a mentoring program for DHMTs and other district personnel that will provide them with the management and leadership skills they need to accomplish public health objectives. COM staff will develop, coordinate, and monitor the training and mentoring processes, as well as certify fellows and mentees upon successful completion of the programs.

Team member
Brian Robie, Team Lead

Program data

Start date	September 2002
Institutional counterparts	▪ Malawi MOH ▪ MACRO ▪ Malawi College of Medicine (COM) ▪ GAP Malawi
Date in-country training started	February 2003
Target audience	▪ TB and HIV/AIDS program managers ▪ DHMTs ▪ Future leaders in the government and private sector

Division activities

	2009	Cumulative
MIPH graduates	0	15
Technical assistance visits	1	17
Completed cycles in-country training	0	7
In-country managers trained	0	222
Number of completed applied management improvement projects	0	61

Accomplishments and outcomes

- Considerable attention was devoted in 2009 to the establishment of an institutional home for the Malawi program. In Summer 2009, a new Corporate Agreement between COM and CDC/GAP Malawi was established to fund a fellowship program for senior HIV/AIDS managers in the MOH, NGOs and other organizations and a mentorship program, with the goal of improving management and leadership competencies of middle level public health managers, DHMTs, program coordinators and managers.
- The MOH has incorporated SMDP's Healthy Plan-it™ tools, including Community Involvement and the Basic Priority Rating System, directly into the DIP Process. Additionally, MOH officials are committed to strengthening planning and use of Healthy Plan-it™ tools in the DIP process.
- Meetings were held with the District Health Office, GAP Malawi staff, and Malawi COM staff as a follow-up on the usefulness of including Healthy Plan-it™ methods and tools in the DIP process. DHO staff stated that they are still using the skills and tools learned in the Healthy Plan-it™ training for the DIP development.
- An additional meeting with the director of planning and policy development in the Malawi MOH, COM staff and GAP Malawi was held to discuss the management and leadership capacity building activities proposed by COM staff for 2010.
- GAP Malawi, SMDP, and the COM staff discussed plans to conduct needs assessments to determine appropriate management and leadership topics for training for program managers and to develop an appropriate curriculum.

Program independence and sustainability

- An institutional home for the program was established at the Malawi COM in July 2009. Maureen Chirwa (MIPH 2008), Head, Health Management Unit at COM, heads up the Malawi management capacity building program. Dr. Chirwa has incorporated curriculum from SMDP's MIPH curriculum into the Fellowship Program, mentoring for DHMTs, the Master of Public Health, the 3d-year medical degree and internships.
- The Malawi management capacity building program is now operating with minimal SMDP technical assistance, with active engagement of about six MIPH in-country graduates and with support from the MOH and GAP Malawi.

Measurement and evaluation activities

The Malawi management capacity building program's current goal is to develop leadership and management capacity for public health managers in order to support the expansion of HIV services and the decentralization of healthcare delivery services, thereby increasing community participation, responsibility, and accountability.

Indicators include

- Number of graduates from the fellowship program promoted into leadership roles in the public or private sector in Malawi
- Increased number of HIV and AIDS indicators meeting pre-set data quality and completeness indicators
- Improved capacity to formulate policy, coordinate and implement plans, and monitor progress to support district health services as determined by MOH planning officials✦

Other Division Projects

AFENET

Program description
The fiscal year 2004 Inter-Agency Agreement (IAA) between USAID and CDC called for CDC to continue engaging in supporting activities in the control and prevention of infectious diseases as well as system strengthening activities. USAID is focusing its infectious disease surveillance resources on building national field epidemiology capacity, strengthening national and regional laboratories, and integrating their functions into field epidemiology, improving biosafety, and introducing new tools for strengthening infectious disease surveillance. USAID and CDC are working to strengthen national level surveillance systems through building national capacity to use information in a manner consistent with good public health practices in all aspects of infectious disease control. USAID is interested in addressing diseases of outbreak potential as well as diseases that are not prone to outbreaks but which contribute significantly to the mortality burden within the country.

Under the IAA, USAID awarded the funds in this activity to CDC to provide technical assistance in support of the African Field Epidemiology Network (AFENET) and its affiliated programs. In the following years, CDC programs such as the Global AIDS Program (GAP), the President's Malaria Initiative (PMI), the Global Immunization Division, Flu, and others have provided funding for specific projects or to support the development of FELTPs in Africa.

Team members
- Peter Nsubuga, Team Lead
- Eric Gogstad, Public Health Advisor (AIZIP)
- Ken Johnson, Public Health Advisor (Western Africa)
- Pascale Krumm, Health Communications Specialist
- Juliette Mannie, Program and Management Analyst
- Andrew Weathers, Public Health Advisor (cooperative agreement)

Partners
- CDC partners: Global Disease Detection Program, CDC field offices, Influenza Division, GAP
- MOHs across sub-Saharan Africa
- President's Malaria Initiative
- USAID
- WHO

Accomplishments
- The support for the 5th African Regional TEPHINET and 3rd AFENET Scientific Conference, in Mombasa, Kenya, September 2009, led to a successful event attended by 375 public health workers from across sub-Saharan Africa. There were 50 oral presentations and more than 100 poster presentations in topics ranging from zoonotic to non-communicable diseases
- With support from AFENET and CDC, Ghana started a 2-year FELTP in 2009 with five residents; it will function in addition to the long-standing 1-year Public Health Schools Without Walls program
- AFENET hired a resident advisor, Simon Antara, to develop the FELTP in Rwanda and supported the delivery of two short courses in outbreak investigations
- On 22 June 2009, the first course on Improvement in Management of Public Health Interventions (IMPHI) was launched at the Ghana School of Public Health. There were 22 participants including 19 Ghanaians, and 3 regional participants from Kenya, Uganda, and Tanzania. This is a 4-week course with a 3-month post-course field component. Four modules were covered: leadership networking and advocacy, program planning and management, operational management and monitoring and evaluation of health programs, and monitoring and evaluation
- AFENET continued to partner with CDC and USAID to develop trainings and guidelines to address the challenges that arise from pandemic influenza and emerging zoonotic diseases outbreaks
- Public Health Laboratory Network: AFENET will maintain the laboratory network website

containing resources, newsletters, and other information for regional and district laboratories and will respond to questions related to developing quality, sustainable clinical laboratories
- AFENET continued to provide the primary administrative and logistical support for the FELTPs in Ghana, Nigeria, South Africa, and Tanzania

Further detailed information about current AFENET activities may be found at www.afenet.net.

Future plans

In 2010, CDC will develop two new cooperative agreements with AFENET to replace the existing agreement when it expires in 2011. The first will be a non-research agreement that will focus primarily on logistical and administrative support for existing programs, as well as support for the development of new programs in the region. The second will be an agreement that will allow CDC and other CDC partners to provide funding for public health research in the member countries that will build on the work already being done in surveillance, laboratory and epidemiological studies.✦

Curriculum

Program Description
In an ongoing effort to standardize training across FETPs and FELTPs, and to ensure that all graduates have mastered the core competencies of the program, division staff have participated in the development of classroom-based instructional materials, including course content, exercises, and evaluation tools.

The goal is to develop standardized, high-quality teaching materials that can be easily used and adapted to meet the needs of any program.

Team Members
- Ron Moolenaar, Team Lead
- Dana Schneider, Health Scientist
- Lisa Bryde, Instructional Designer
- Russell Gerber, Medical Epidemiologist
- Donna Jones, Medical Epidemiologist
- Denise Traicoff, Health Education Specialist
- Ban Majeed, Health Scientist

Partners
- CDC partners: Epidemic Intelligence Service
- Central America FETP
- China FETP
- U.S. Defense Threat Reduction Agency
- University of North Carolina, Chapel Hill
- WHO-SEARO

Accomplishments
In 2009, the curriculum project workgroup continued to use the in-house review system developed in the previous year and are still engaged in development and review of topics belonging to the "Big Three" core competencies: Epidemiologic Methods, Biostatistics, and Surveillance. Currently, 19 of the original 39 topics falling into these three competencies have been reviewed, revised, and submitted for clearance at the division level.

Next steps or future plans
- Complete the remaining Big Three topics and move them through clearance
- Make all cleared topics available to FETP and FELTP directors
- Create an online system that will facilitate distribution and evaluation of the teaching materials
- Prepare materials for topics falling under the other competencies: Lab and Biosafety, Communication, Computer Technology, Management and Leadership, Prevention Effectiveness, Teaching and Mentoring, and Epidemiology of Diseases and Injury✦

Monitoring and Evaluation

Program description

FELTP

Effective detection and response globally depends on the capacity of the public health infrastructure of countries throughout the world. The public health response requires competent epidemiology and surveillance staff and systems which is built on a basic infrastructure of workforce capacity and competency, diagnostic and data systems, and organizational and systems capacity.

CDC been supporting FELTPs for more than 20 years. These programs have been recognized as critical elements in helping countries build applied epidemiology capacity and support the development of improved outbreak response, surveillance and evidence-based decision making thus supporting stronger public health systems.

Sustainable Management Development Program (SMDP)

SMDP was established by CDC in 1992 to develop public health management training programs in low and middle income countries. Over the course of 15 years, SMDP employed a train-the-trainer approach to pursue its goal.

The first step in the approach was to sponsor a 6-week annual management and leadership development program called the Management for International Public Health (MIPH) course for approximately 30 participants. Most participants attended to become management trainers within the MOH, an NGO, or an academic institution.

In the next step of the SMDP approach, once MIPH fellows completed the course and returned home, SMDP provided in-person technical assistance with the implementation of the project plan and the teaching of course content to others. This step was followed if country funding was available to support it. In some instances staff provided follow-up site visits and support without country funding.

A third step in the SMDP approach was continuing education. MIPH fellows were encouraged to attend biennial conferences, often with travel support paid by SMDP, to learn new skills, network, and present the results of management-related improvement programs and projects on which they had been working. Using the approach described above, the program has trained 378 fellows from 70 developing countries at its MIPH course since its inception.

There are now several different approaches to these training models being used in programs around the world. As more programs are being developed, it is clear that a standard set of guidelines for monitoring the implementation and outputs and evaluating the outcomes and impact of the programs is important. This will assist both the programs in improving their processes and those who provide guidance and support to these programs by providing a clear set of best practices. This evaluation process could assist in identifying the best practices to assist with the development of new programs to achieve maximum effectiveness in building the workforce and public health system capacity for surveillance, outbreak detection and control, and laboratory management. The process will also ensure that the division is optimally providing the necessary support to these capacity development efforts.

To ensure program effectiveness, a program for the systematic, periodic monitoring and evaluation (M&E) of outputs and outcomes is being developed to allow for evaluation of program impact on public health systems and ultimately the health of the public. This is an essential area for developing the infrastructure necessary to respond to public health threats and surveillance of diseases of public health importance. The division M&E Working Group is refining and broadening the M&E framework for FELTPs, SMDP, and the division in general. The division will have tools and procedures for the monitoring, evaluation, and quality improvement of all aspects of the work supported by the division.

Team members

- Donna Jones, Team Lead
- Peter Bloland, Veterinary Epidemiologist
- Suzanne Elbon, Instructional Designer
- Russell Gerber, Medical Epidemiologist
- Eric Gogstad, Public Health Analyst
- Elizabeth Howze, Health Education Specialist
- Karen Kun, Health Scientist

Accomplishments

- Finalized FETP self-assessment tool and pilot tested it
- Presented FETP self-assessment tool to TEPHINET program directors
- Began developing a logic model for the division
- Began work on quality indicators for individual level work
- Collected data for annual report
- EpiTrack:
  - EpiTrack conversion from EpiInfo: Central America, Kenya, Zimbabwe
  - Creation of EpiTrack Essential (customized to track only key indicators)
  - Modified all versions of EpiTrack for AFENET programs to include standard data fields; included functionality to export this subset of data to AFENET central office and presented first report of data from AFENET Master database at AFENET meeting, September 2009
  - Modified versions of CAP programs to include functionality to merge country programs into a regional master database
  - EpiTrack implementation: West Africa (Burkina Faso, Mali, Togo, Niger), Ghana, Nigeria, Tanzania
- Developed the SMDP strategic direction and new framework
- Initial development of SMDP's public health organizational self-assessment tool

Future plans

- Continue to use the annual report to provide systematic collection of specific indicators for all division-supported programs to obtain program and individual data for cohorts enrolled in 2008/2009
- Work with FELTPs to implement EpiTrack when stage of program development is appropriate for the routine data collection and reporting of programmatic and individual data
- Develop the M&E indicators for the division based upon a logic model developed with input from program staff and other stakeholders
- Provide support for facilitated self-assessments of requested FELTPs using a standard framework; this tool will be used to provide program improvement
- Develop guidance and support for quality improvement through the development of field work support tools and competency evaluation tools
- Conduct a multi-site evaluation of the division-supported programs to better understand the impacts, return on investment, and factors that lead to success and sustainability or contribute to limited program success
- Complete the public health organizational self-assessment tool to measure management/ organizational capacity
- Complete The Best Practices Project for SMDP programs

Programmatic accomplishments in support of division critical public health outcomes

Increased capacity of the workforce

Our programs continue to expand the capacity of the public health workforce, both through long term and short course trainings.

In China, the long term training has built the capacity for continuing to increase training with 5 graduates holding positions as C-FETP staff for the national level and 68 serving as mentors at field bases.

Also, the C-FETP Director (Dr. Zeng Guang), resident advisor (Dr. Bao-Ping Zhu), and instructors (Huilai Ma and Lijie Zhang), have been teaching field epidemiology classes in Harbin, China's north-eastern Heilongjiang Province for 55 epidemiologists. This 1-month long class is part of the efforts by the provincial health bureau to revamp the epidemiology workforce to better respond to the current H1N1 pandemic and other communicable disease threats in the province. This effort will help improve the detection, investigation and control of outbreaks in the province.

In the Central Asia program, to date, 90% of the graduates are still working in their government health system; several of these have been appointed to high level positions in the MOH where they can have influence on the way public health is practiced throughout their country.

Kazakhstan
- Three out of the five epidemiologists working for the National (Republican) Surveillance Department are FETP graduates; one of them is the head of that department
- Two other graduates are heads of regional and district surveillance departments
- An FETP graduate is the national TB coordinator. Another graduate is working at the Republican AIDS Center as a coordinator of the Regional Training Program on HIV Surveillance

Tajikistan
- There is no postgraduate institution for public health and the FETP program is now regarded as the only venue for continued education for public health officers
- One of the FETP graduates is now the deputy minister of health; another one is a deputy director of the Tajik Republican Sanitary Epidemiologic Station

Uzbekistan
- A graduate is currently the head of an oblast sanitary epidemiologic station
- Another graduate is the head of the Infection Control Department in the MOH

Kyrgyzstan
- A graduate is the head of the Regional Surveillance Department

Strengthened surveillance systems
Our programs and graduates are working to strengthen surveillance systems within their countries. Some illustrative examples include:
- Costa Rica established a protocol for surveillance in shelters following outbreaks of diarrhea and respiratory disease in these locations. Additionally, the program responded to an outbreak of a highly virulent type of Clostridium difficile, resulting in the implementation of a surveillance system for detecting these highly virulent genotypes
- In Ethiopia, the FELTP participated in MOH National Surveillance and Emergency Response Planning meeting and took a leading role in revising and updating the list of nationally notifiable diseases, revising case definitions, reporting guidelines and forms
- In Nigeria, an improved data capture form for the diagnosis of rabies in dogs used by the National Veterinary Research Institute was developed that enabled the institute to capture patient based information that would aid in subsequent follow-up; previously, the animal, human, and community linkages in rabies control were limited

Improved preparedness and response
Our programs and graduates have created an improved ability to respond to emergencies in the countries. In Kenya, the MOH frequently responds directly to infectious disease outbreaks with FELTP graduates and trainees when previously it would need to request assistance from international agencies. The program was an integral part of response to H1N1 outbreaks in the country.

In China, the C-FETP worked on investigations relevant to the H1N1 2009 pandemic influenza threat, including

- To estimate risk of transmission of H1N1 2009 influenza on long distance air flights C-FETP officers are following-up passengers of the flight that landed in Shanghai with a passenger infected with H1N1. Results of this study will help support policy on the management of airline

passengers exposed to influenza.
- In the Fujian field base, C-FETP officers are estimating the relative importance of different types of anonymous community contact (e.g., public transport, fast food restaurants, hospital outpatient departments) in the transmission of seasonal influenza virus. Results will aid in developing and modifying social-distancing policies during influenza pandemics

Additionally C-FETP officers have worked on a number of emergency investigations at the different provincial field bases, including food poisoning outbreak during a wedding in Sichuan, a chicken-pox outbreak in Chongqing, and a TB outbreak in a school in Anhui. Through the extensive use of provincial field bases, the C-FETP is developing improved surveillance and response in both C-FETP officers and provincial health workers.

In Ethiopia, the EFELTP conducted case investigations and contact tracing in response to introduction of H1N1 in the country, staffed, and managed the H1N1 quarantine facility at the international airport, served on the National H1N1 Response Committee as the primary H1N1 MOH coordinator across government agencies, liaising with hospitals and AFRO/WHO, preparing daily H1N1 situation updates for MOH and the health minister.

In Brazil, two trainees worked full-time in the emergency operations center on influenza response for H1N1, and other trainees were on standby for possible field investigations. Much of the epidemiologic expertise in the ministry's federal level response was provided by FETP graduates (head of influenza surveillance section, head of emergency operations division, head of transmissible diseases division and various staff members of these groups are FETP graduates). Two FETP teams traveled to Argentina to support H1N1 surveillance and investigation efforts at the request of the Argentine MOH.

In Nigeria, the FELTP facilitated procurement and prepositioning of relevant laboratory reagents and drugs in affected states for prompt confirmation and treatment of future outbreaks of cholera.

Expanded collaboration and networking within and across national boundaries
Our programs provide a number of opportunities and venues for expanding collaboration across boundaries to improve public health around the world.

The Brazilian FETP director and CDC advisor are participating in an assessment visit for the establishment of an FETP/FELTP in Mozambique.

In Nigeria, residents' work in Lassa fever and rabies control fostered closer inter-sectoral collaborations between the MOHs and Ministries of Agriculture in community level, hospital level, as well as environmental related factors important in the control of the outbreaks.

New program networks also facilitate linkages. SAFETYNET (Southeast Asia Field Epidemiology and Technology Network), convened its inaugural meeting in Manila with representatives from CDC, TEPHINET, and FETPs in China, Indonesia, Cambodia, and Philippines, and from the Vietnam and Thailand MOPH. The goal of this network is to strengthen epidemiologic capacity for disease surveillance, response, investigation, and control action in Mekong Basin Disease Surveillance countries (Cambodia, Laos, Myanmar, Thailand, Vietnam).

The East Mediterranean Public Health Network (EMPHNET) received its license from the Jordanian government to operate as non-profit organization. EMPHNET is a network for the FETPs in the EMRO region and will work with CDC, WHO, and other partners to strengthen applied epidemiology training and public health practice in the region. EMPHINET held its first scientific conference in Amman, Jordan October 19–22, 2009.

Enhanced effectiveness of policies and practice
The activities of the programs and graduates can lead to improvement in evidence-based policies and practices.

In Central America, after an investigation of an outbreak of human and animal rabies in a community of San Cristobal, Dominican Republic, the MOH changed the vaccine and treatment protocol to be used in persons attacked by rabid animals. The investigation showed that the vaccine in current

use did not have the required potency (by PAHO guidelines) and had caused a serious side effect (Guillan-Barre) in two of the three persons who received it. All the population of cats and dogs in the community were vaccinated, and there were no more cases of animal or human rabies.

As a result of an investigation of an FETP from the 6th cohort in Central America, an outbreak of leptospirosis in the rural community of El Salado-Galván-Baoruco was confirmed. The investigation determined the extent and mode of transmission of the outbreak. The outbreak was due to bathing practices in the canal, which had been contaminated by animal feces after heavy rains in the weeks prior to the outbreak. The incidence of leptospirosis declined to zero after banning access to the canal, administering of chemoprophylaxis, and educating the villagers on disease prevention.

An HIV study in Osh conducted with the Central Asia program resulted in a more focused attention of the MOH in Kyrgyzstan on HIV nosocomial transmission of the infection in healthcare facilities. Global Fund provided the MOH with resources to acquire disposable syringes and other equipment. To improve sensitivity of the system, surveillance activities were intensified in the southern part of the country among children and pregnant women.

The Ethiopia FELTP investigation documented low safety belt usage and presented its results to Traffic Safety authorities. A mandatory safety belt law was adopted in Addis Ababa in December 2009. Additionally, resident recommendations to improve acute watery diarrhea preparedness by constructing latrines and providing safe water at large religious and cultural gatherings were adopted and implement by the Oromia Regional Health Bureau.✦

Appendices

Publications and Presentations

Brazil FETP

Publications

- Beltrao HBM, et al. Investigation of two outbreaks of suspected oral transmission of acute Chagas disease in the Amazon region, Para State, Brazil, 2007. Trop Doc 2009;39:231–239
- Harris JR, Cavallaro EC, et al. Field evaluation of Crystal VC Rapid Dipstick test for cholera during a cholera outbreak in Guinea-Bissau. Trop Med Internat Health 2009;14:1–5
- Nóbrega AA, et al. Oral transmission of Chagas disease by consumption of açaí palm fruit, Brazil. Emerg Infect Dis 2009;15:653–5
- Santana-Porto EA, et al. Suspected Brazilian purpuric fever, Brazilian Amazon Region [letter]. Emerg Infect Dis 2009;15:675–6

Central America FETP

Presentations

TEPHINET Regional Biannual Conference of the Americas, San José, Costa Rica, December 1–4, 2009

Costa Rica

- Maria de la Paz Barbosa. Impacto de la fortificación de alimentos con acido fólico en la prevalencia de defectos del tubo neural y mortalidad infantil en Costa Rica, 1997–2008 (Oral)
- Cecilia Bastos. Brote de síndrome respiratorio agudo en escuela urbanomarginal, Los Guido, San José, Costa Rica, mayo 2009 (Oral)
- Otto Calvo. Comportamiento de la tasa de deserción para la vacuna DPT en niños menores de un año en el Área de Salud Catedral Noreste (ASCN), San José, Costa Rica, 2006–2008 (Poster)
- Jose Castro. Descripción epidemiológica de la tuberculosis en el Area de Salud Mata Redonda y Hospital, en el periodo 2004–2008 (Oral)
- Jose Castro. Relación entre los hallazgos ultrasonográficos y las complicaciones por Angiostrongylus costaricensis en los niños atendidos en el Hospital Nacional de Niños entre los años 1999 al 2003 (Poster)
- Brenda Delgadillo. Estudio del brote de influenza tipo A H1 N1, Ciudad Quesada, Alajuela. Costa Rica, mayo a agosto del 2009," Resultados preliminares (Poster)
- Azalea Espinoza. Tumor maligno de próstata en Costa Rica: comportamiento epidemiológico y distribución geográfica, 1990 al 2008 (Oral)
- Julia Freer. Análisis retrospectivo de Infecciones nosocomiales en el hospital México durante el primer semestre del año 2009 (Oral)
- Julia Freer. Brote de Hepatitis A en el Triángulo Solidario San José, Costa Rica, 2009 (Poster)
- Antonio Garcia. Comportamiento de la varicela en los niños atendidos en el Hospital (Poster)
- Guiselle Guzmán. Caracterización de la pandemia por el nuevo virus Influenza A H1N1, Caja Costarricense de Seguro Social, Costa Rica, SE 16–32, 2009 (Oral)
- Guiselle Guzmán. Brote de síndrome respiratorio agudo en niños hospitalizados del grupo indígena Cabécar–Chirripó, Turrialba, Costa Rica, 2007 (Poster)
- Zeidy Mata. Análisis espacial de la tuberculosis en Costa Rica, 2004–2008 (Oral)
- Zeidy Mata. Análisis de la situación epidemiológica de la tuberculosis en Costa Rica, período 2004-2008 (Poster)
- Maritza Morera. Análisis preliminar de un brote por clostridium difficile y el uso de antibióticos en un hospital geriátrico, San José Costa Rica, enero 2008 a junio 2009 (Poster)
- Fabio Quesada. Desconocimiento local de la situación del dengue, por debilidades en el Sistema de Vigilancia Nacional de la Enfermedad, Isla Caballo, Costa Rica, 2008 Oral)
- Elenita Ramírez. Análisis de la situación del cáncer cervicouterino en Costa Rica, 1990–2000 (Oral)
- Elenita Ramírez. Brote de gastroenteritis aguda por E. coli en la comunidad de Barrio Jesús de Santa Bárbara de Heredia, marzo–abril 2009 (Oral)
- Catalina Ramirez. Brote de dengue hemorrágico después de 16 años de historia, Costa Rica, 2006–2008 (Poster)

- Roy Wong. Brote nosocomial por clostridium difficile en Costa Rica (Oral)
- Roy Wong. Effect of the inclusion of Influenza vaccination as part of the regular immunization schedule in the hospitalization and mortality for influenza of pneumonia in Costa Rica, 2000–2006 (Oral)

El Salvador

- Rafael Chacón. Análisis de datos de la vigilancia de enfermedad tipo influenza de la provincia de Santa Fe, Argentina, marzo–julio 2009 (Oral)
- Reina Hernandez. Intoxicación alimentaria por Staphylococcus Aureus en Escuela Nacional de Agricultura (ENA), Ciudad Arce, La Libertad, El Salvador, 1 y 2 Abril 2009 (Poster)
- Guillermo Romero Barrera. Análisis del sistema de vigilancia epidemiológica de Tos ferina, El Salvador, 2004–2008 (Oral)
- Guillermo Romero Barrera. Intoxicación alimentaría de Alumnos del Instituto José Simeón Cañas en Zacatecoluca, La Paz, El Salvador, mayo 2009 (Poster)

Guatemala

- Jorge Alvarado. Brote de Serratia Marcences en sala de neonatos del Hospital de Ginecología y Obstetricia del Instituto Guatemalteco de Seguridad Social, Guatemala, Dicembre 2008 (Oral)
- Jorge Alvarado. Incidencia de infección neonatal nosocomial, en sala de neonatología del Hospital de Ginecología y Obstetricia, Guatemala, 2008 (Poster)
- Jorge Alvarado. Trastornos psicológicos durante el embarazo, en pacientes atendidas en el Hospital de Ginecología y Obstetricia del Instituto Guatemalteco de Seguridad Social de Guatemala, Guatemala, junio 2008 (Poster)
- Jorge Alvarado. Longitud del cuello uterino (Cervicometría) como predictor de parto pretérmino, Guatemala, 2008 (Poster)
- Jorge Alvarado. Obesidad y embarazo, en el Hospital de Ginecología y Obstetricia del Instituto Guatemalteco de Seguridad Social de Guatemala, 2008 (Poster)
- Haroldo Barillas. Mortalidad materna en 5 municipios del departamento de Guatemala, 2008–2009 (Oral)
- Elsa Berganza. Prevalencia de enfermedad de chagas en mujeres embarazadas y factores de riesgo, en municipios endémicos. Área de salud Jutiapa, septiembre 2008 (Oral)
- Elsa Berganza. Brote de infección respiratoria aguda en trabajadores del centro de salud de atescatempa, Jutiapa, Guatemala, abril de 2008 (Poster)
- Rossana Carranza. Brote de enfermedad tipo influenza en centro carcelario, Zacapa, Guatemala, junio 2009 (Oral)
- Rossana Carranza. Brote de infección respiratoria aguda, comunidad Tasharté, La Unión, Zacapa, Guatemala, marzo 2009 (Oral)
- Sheilee Díaz. Factores asociados a la transmisión de la infección de chagas en embarazadas de cuatro municipios de alta transmisión, Chiquimula, Guatemala, julio–agosto 2008 (Oral)
- Sheilee Díaz. Análisis del subsistema de vigilancia laboratorial de chagas, 2006–2008 (Poster)
- Mónica Herrera. Análisis del sistema de vigilancia de neumonía-chimaltenango, Guatemala, 2004–2008 (Poster)
- Maria René López. Análisis de situación de salud del Departamento de Izabal, Guatemala, 2007 (Poster)
- Maria René López. Vigilancia de virus del oeste del nilo en gallinas centinelas en Puerto Barrios, Izabal, Guatemala, 2006–2009 (Poster)
- Antonio Paredes. Brote de Intoxicación por hongos, caserío Marillanos, aldea los Mixcos, Municipio de Palencia, Guatemala, junio 2008 (Poster)
- Sergio Pérez. Brote de Influenza A en hogar de niños con VIH/SIDA Guatemala, enero 2009 (Oral)
- Sergio Pérez. Evaluación del sistema de vigilancia epidemiológica de las infecciones respiratorias agudas, Guatemala, 2002–2007 (Poster)
- Arely Ramos. Análisis del sistema de vigilancia de mortalidad materna-Área de Salud Peten Sur Occidental, Guatemala, 2004–2008 (Oral)
- Emma Lissete Reyes. Brote de intoxicación alimentaria en un convivió en Santa Rosa, Guatemala, 2009 (Oral)

- Emma Lissete Reyes. Estudio de prevalencia y factores de riesgo en VIH–SIDA y sífilis en Trabajadoras Comerciales del Sexo, en el Santa Rosa Guatemala, 2009 (Oral)
- Karina Rodríguez Vasquez. Encuesta de personas con discapacidad con énfasis en la niñez en el departamento de Baja Verapaz, Guatemala, 2009 (Oral)
- Silvia Sosa. Brote de gastroenteritis provocado por norovirus en Guatemala, febrero 2009 (Oral)
- Silvia Sosa. Vigilancia entomológica de Virus del Oeste del Nilo en Puerto Barrios, Izabal, Guatemala de 2006 a 2009 (Oral)

Honduras

- Víctor Borjas. Análisis de mortalidad de mujeres en edad fértil y mortalidad materna en la región departamental de Cortes, Honduras, 2008 (Oral)
- Fany García. Posibles factores que influyen en la poca realización del examen del VIH en mujeres embarazadas, municipio de Gracias Lempira, Honduras, agosto 2008 (Oral)
- Enrique López. Muerte por Intoxicación por hongos en una familia en Aguanqueterique, Yarula, La Paz, Honduras, junio 2008 (Poster)
- Rosibel Martínez. Conglomerado de infección respiratoria aguda entre empleados de hospital privado, San Pedro Sula, Honduras, marzo 2009 (Poster)
- Ofelia Martínez. Descripción epidemiológica de la malaria urbana en el municipio de Catacamas Olancho Honduras, 2004–2008 (Poster)
- Enrique Medina. Intoxicación por consumo de hongos silvestres, Aguasinga, Santa Elena, departamento de la Paz, Honduras, junio 2008 (Poster)
- Mario Mejía. Brote de infección respiratoria aguda grave en menores de cinco años en comunidades del municipio de Gualcince, Lempira Honduras, 2007 (Oral)
- Homer Mejía. Brote de Influenza A (H1N1) en albergue, Tegucigalpa, Honduras (Poster)
- Herminia Moreno. Brote de influenza tipo A (H1N1) en Universidad privada, San Antonio de Oriente, Francisco Morazán, Honduras. Mayo a Julio 2009 (Oral)
- Gustavo Urbina. Brote de intoxicación por alimentos debido a Salmonella gueuletepec, en la ciudad de Comayagüela, Francisco Morazán, Honduras, 19–22 abril 2009 (Oral)
- Gustavo Urbina. Análisis del sistema de vigilancia de las gastroenteritis por Rotavirus, Honduras, 2005–2008 (Poster)

Nicaragua

Holman Ulloa. Brote de intoxicación por plaguicida en trabajadores de institución de gobierno, Corinto, Nicaragua, mayo 2009 (Oral)

Panamá

Influenza A (H1N1) en Panamá, mayo – agosto 2009. Lourdes Moreno (Poster)

República Dominicana

- Análisis del sistema de vigilancia de las enfermedades transmitidas por alimentos, República Dominicana, 2004 – 2008. Mercedes Jimenez (Poster)
- Brote de hepatitis viral A en menores de 15 años, en barrio Limonal, Sabana Larga, San José de Ocoa, República Dominicana, septiembre – diciembre, 2008. Leonel Lerebours (Poster)
- Brote de intoxicación alimentaría por ingesta de agua contaminada, Espaillat- República Dominicana, 2009. Ramona Nuñez Camarena (Oral)
- Análisis sistema de vigilancia de infecciones respiratorias agudas graves, República Dominicana, febrero 2008- abril 2009. Ronald Skewes (Oral)
- Brote de enfermedad trasmitida por alimentos en una guardería San Juan, República Dominicana, enero, 2009. Cecilia Then (Poster)

Publications

- Morales Gina, Aragón M, Lara B. Factores Asociados con la No Adherencia a la Terapia Antirretoviral en personas con Síndrome de Inmunodeficiencia Adquirida. Revista Médica Hondureña. 2009 Abril-mayo-Junio; 7(2):63-66
- Mejía Mario, Murillo AN, Suazo H, et al. Brote por Staphilococcus aureus en una Guadería Infantil en Choluteca. Honduras. Revista Médica Hondureña. 2009 Abril-mayo-Junio; 7(2):67-69

- Smith-Sivertsen T, Díaz E, Pope D, Díaz A, et al. Effect of reducing indoor air pollution on women's respiratory symptoms and lung function: Respire. Randomized trial. Guatemala tandomized trial. American Journal of Epidemiology. 2009 Jul 15; 170(2):211-20

Central Asia FETP

Presentations

- Anna Kaspirova. Roundtable between CDC/CAR and the MOH of Kyrgyzstan, Bishkek, October 2009. HIV outbreak among children, Osh city, September 2008 to February 2009 (Oral)
- Musina Zhanat. Roundtable between CDC/CAR and the MOH of Kazakhstan, Astana, October 2009. Foodborne outbreak of gastrointestinal disease, Aktau, Kazakhstan, August 2009 (Oral)

China FETP

Presentations

4th C-FETP National Conference, Beijing, China, October 2009 (all were oral presentations)

- Tang Xuefeng. Cholera outbreak in Sichuan
- Wang Zhaonan. Hepatitis A outbreak in a township, HeBei Province
- He Fan. Shigellosis outbreak in an elementary school, Sichuan Province
- Li Cheng. Shigellosis outbreak in an elementary school, Sichuan Province
- Wang Rui. Diarrhea outbreak in Shanxi
- Wang Ying. Foodborne gastroenteritis outbreak in Shanghai
- Mao Chao. Investigation of measles high incidence in Suzhou
- Su Yang. Measles outbreak in four counties
- Zhang Guohong. Measles outbreak in four counties
- Liu Xuxiang. Clusters of chilblains in three rural boarding schools
- Zhu Yrfan. Investigation of mesenteric lymph nodes sore in a kindergarten
- Liu Xuexiang. Survey situation of anti-fever medicines used in children in hospitals
- He Fan. Severe cases of HFMD score standard
- Zhang Guohong. Survey of anti-fever medication in children under 6 years
- Han Ke. Investigation of H1N1 outbreak in Sichuan
- Liu Mingbin. Investigation of risk factors of influenza transmission
- Xu Zhenghui. Investigation of an outbreak of norovirus diarrhea in Baoan
- Han Ke. Investigation of medical staff hand hygiene status and influencing factors in a hospital

58th Epidemic Intelligence Service Conference, Atlanta, USA, April 2009

Gao Yongjun. Urolithiasis outbreak in children associated with consumption of milk products contaminated with melamine (Oral)

5th TEPHINET Southeast Asia and Western Pacific Bi-Regional Scientific Conference, Seoul, South Korea, 2–6 November 2009

- Zha Risheng. A pulmonary TB outbreak in a middle school in Ningbo City (Oral)
- Chen Jin. Hepatitis A outbreak due to contaminated well-water in a primary school (Oral)
- Xing Xueseng. Hand, foot, and mouth disease outbreak in a village (Poster)
- Li Cheng. Waterborne outbreak of shigella among construction workers (Poster)

Publications

- Hao Aihua, et al. Public health events and media report analyst in Guang Zhou, 2004–2007. Preventive Medicine Information, 2009 (3)
- Hao Aihua, et al. Disease control and prevention, emergency risk communication needs of staff, Guangzhou. Preventive Medicine Information, 2009 (5)
- Ke Han, et al. Lack of airborne transmission during outbreak of pandemic (H1N1) 2009 among tour group members, China, June 2009, EID, October 2009, Vol. 15
- Li Furong. Generalized additive model to study the temperature effect on the population mortality rate. Environment and Health, 2009 (8)
- Shen Jinyu. Sang typhoon disaster disease surveillance re-investigation. Tropical Medicine, 2009 (3)

- Shen Jinyu. Risk factors for injury during typhoon Saomei. Epidemiology, 2009 (11)
- Shen Jinyu. Closed school with all norovirus outbreak investigation. Disease Control of China, 2009 (6)
- Shi Ying. The level of metabolic syndrome prevalence and risk factors in Beijing. Journal of Preventive Medicine of China, Jan 2009, Vol. 43
- Yang Jing. Quality of life in patients with type 2 diabetes and its influencing factors in Zha Bei District, Shanghai. Health Education of China, March 2009, Vol. 25
- Yuan, Jun. Mycobacterium abscessus post-injection abscesses from extrinsic contamination of multiple-dose bottles of normal saline in a rural clinic. International Journal of Infectious Diseases, September 2009, 13(5)
- Yuan, Jun. Reported changes in health-related behaviors in Chinese urban residents in response to an influenza pandemic. Epidemiology and Infection, July 2009, 137 (7)
- Zeng Guang. Infectivity of Severe Acute Respiratory Syndrome during its incubation period. Biomedical and Environmental Sciences, December 2009
- Zhang Lijie. An outbreak of hepatitis A in recently vaccinated students from ice snacks made from contaminated well water. Epidemiology infection, 2009 (137): 428–433
- Zhang Lijie. Zinc gluconate nasal spray in the prevention of acute upper respiratory tract infection. Preventive Medicine Information, July 2009, Vol. 25
- Zhou Sheng et al. Border residents of malaria endemic areas of malaria IEC strategy development needs analysis in Yun Nan Province. Modern Preventive Medicine, 2009 (15)
- Zhou Sheng et al. Use of insecticide-treated mosquito nets in malaria endemic areas and the promotion of state strategies in Yun Nan Province. Vector Biology and Control of China, 2009 (4)

Egypt FETP

Presentation

Four presentations (3 oral and 1 poster presentations) were accepted at the 4th TEPHINET Regional Scientific Conference in Amman, Jordan, October 19–22, 2009.

Ethiopia FELTP

Presentations

5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009

- Intestinal parasites and *Salmonella Typhi* among food handlers in Bahir Dar, Ethiopia, 2009
- Malaria outbreak investigation in Horoguduru Wollega zone, Oromia Regional State, Ethiopia, April–May 2009

ESCAIDE Conference, Stockholm Sweden, October 2009

Epidemiology and antimicrobial resistance to Vibrio Cholera Serotype Inaba isolated from outbreaks in northwestern Ethiopia, 2006–2008

EPHA

A field investigation of safety belt usage, Addis Ababa, Ethiopia, 2009

ICID

Outbreak of meningococcal meningitis in Rural Amhara Region, Ethiopia, July 2009

Ghana FELTP

Presentations

- International conference on rabies, Ghana, March 2009
- 5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009, 16 poster presentations and 5 oral presentations were presented

India FETP

Presentations

58th Epidemic Intelligence Service Conference, Atlanta, USA, April 2009

- Jagannath Sarkar. Towards the elimination of malaria deaths from Jalpaiguri District, West Bengal, India: Evidence for further action (Oral)
- Kisalay Datta. Survey of knowledge, attitude and practices for tuberculosis and Revised National Tuberculosis Control Programme among private practitioners, Hooghly, West Bengal, India, 2008 (Poster)
- Dinesh M Singh. Factors associated with default among new sputum-positive tuberculosis patients treated with Directly Observed Treatment Short Course (DOTS), Thoubal District, Manipur, India, 2008 (Poster)
- Vikram Katoch. Assessment of drug use in a semi-tribal district of Himachal Pradesh, India, 2008 (Poster)

Fifth TEPHINET Asia & Western Pacific Bi-regional Scientific Conference, Seoul, South Korea 2–6 November 2009

- Balraj Singh. Increasing HIV prevalence amongst high risk populations indicates an imminent transition from low to concentrated epidemic; trends from Himachal Pradesh, India, 2000–2007 (Oral)
- Ajay Kumar Chakravarti. Chikungunya fever among horticulture labourers in Muchisha Block, South 24 Parganas district, West Bengal. India (Oral)
- Parveen Kumar Anand. Water born Typhoid outbreak in remote village of desert district Pali in Rajasthan, India, 2007 (Oral)
- Omesh Kumar. Breaking the barriers to establish a low cost Intra-dermal Anti-rabies Clinic in Shimla district of Himachal Pradesh through innovative "Pooling Strategy." A first in North India (Oral)
- Dilip Kumar Biswas. Contaminated drinking water from a leaking pipe line was probable cause of diarrhea outbreak in an urban area of West Bengal, India, 2008 (Oral)
- Somorjit Ningobam. An outbreak of Hepatitis E - Khoyathong Polem Leikai, Imphal west district, Manipur, India, 2006 (Oral)
- Pankaj Kumar Jain. Hepatitis A Outbreak in a remote village of Uttarakhand, India, July 2008 (Oral)
- Rajkumar Tilotama Devi. Measles outbreak, Konthoujam Makha Leikai, Imphal West District, Manipur, India, January, 2007 (Oral)
- Tapas Patra. Delayed antenatal visit, unsafe breast feeding practices and inadequate care of high risk neonates increases risk of neonatal mortality among tribal community, Orissa, Eastern India, 2008 (Oral)
- M. Dinesh Singh. An outbreak of gastrointestinal illness following consumption of Hawaijar, a traditional fermented soybean, in Kieshamthong locality, Imphal West, Manipur, India, 2008 (Poster)
- M.M. Lakhani. Description and evaluation of the leptospirosis surveillance system, Valsad District, Gujarat-India, 2007 (Poster)
- Balraj Singh. Inappropriate clinical use of blood exposes one third of the recipients to unwarranted risks of transfusions: a study from Kangra District, Himachal Pradesh, India, 2008 (Poster)
- Balraj Singh. Modified Adult Treatment Panel-Third Report criteria are superior to International Diabetes Federation criteria in diagnosis of metabolic syndrome: results from a study among hypertension (Poster)
- Tapan Saha. An urban, waterborne outbreak of Shigellosis in Nadia District, West Bengal, India, 2007 (Poster)
- Udit Kumar. Participation of private sector is crucial to improve TB programme performance (Poster)
- Vikram Katoch. Has Directly Observed Treatment improved outcome for patients with TB in semi tribal district Chamba, Himachal Pradesh, India 2003-2007 (Poster)
- Tana Takum. Measles outbreak in an urban locality, Papum Pare district, Arunachal Pradesh, India, 2007 (Poster)

- Tana Takum. Determinants of complete childhood immunization, Papum Pare district, Arunachal Pradesh, North East India, 2008 (Poster)
- Omesh Kumar. Investigating a death due to rabies and initiation of containment of the outbreak in a scarcely populated hilly Village, Talai near Shimla, Himachal Pradesh, 2009 (Poster)
- Omesh Kumar. Programme evaluation of the Revised National Tuberculosis Control Programme, Shimla district of Himachal Pradesh, India (Poster)
- Kajal Krishna Banik. Safe blood:" is it really safe in North 24 Parganas, West Bengal, India (Poster)
- Kishalay Datta. Measles outbreak in an urban locality, Hooghly, West Bengal, India, 2008: The consequence of low vaccination coverage (Poster)
- Tapas Kumar Ray. Targeting the poor and the illiterate to control measles in Murshidabad, West Bengal, India, 2008 (Poster)

Publications

- Murhekar M, Moolenaar R, Hutin Y, Broome C. Investigating outbreaks: practical guidance in the Indian scenario. Natl Med J India. 2009; 22:252–6
- Saha T, Murhekar M, Hutin YJ, Ramamurthy T. An urban, water-borne outbreak of diarrhoea and shigellosis in a district town in eastern India. Natl Med J India. 2009;22: 237–9
- Panda M, Hutin YJ, Ramachandran V, Murhekar M. A fatal waterborne outbreak of pesticide poisoning caused by damaged pipelines, sindhikela, bolangir, orissa, India, 2008. J Toxicol. 2009
- Sharma PK, Ramanchandran R, Hutin YJ, Sharma R, Gupte MD. A malaria outbreak in Naxalbari, Darjeeling district, West Bengal, India, 2005: weaknesses in disease control, important risk factors. Malar J. 2009;8:288
- Martolia HC, Hutin Y, Ramachandran V, Manickam P, Murhekar M, Gupte M. An outbreak of hepatitis E tracked to a spring in the foothills of the Himalayas, India, 2005. Indian J Gastroenterol. 2009; 28:99–101
- Das A, Manickam P, Hutin Y, Pal BB, Chhotray GP, Kar SK, Gupte MD. An outbreak of cholera associated with an unprotected well in Parbatia, Orissa, Eastern India. J Health Popul Nutr. 2009;27:646–51
- Bhunia R, Hutin Y, Ramkrishnan R, Ghosh PK, Dey S, Murhekar M. Reducing Use of Injections Through Interactional Group Discussions A Randomized Controlled Trial. Indian Pediatr. 2009 Sep 3. [Epub ahead of print]
- Bhunia R, Ramakrishnan R, Hutin Y, Gupte MD. Cholera outbreak secondary to contaminated pipe water in an urban area, West Bengal, India, 2006. Indian J Gastroenterol. 2009;28:62–4
- Takum T, Gara D, Tagyung H, Murhekar MV. An outbreak of pertussis in Sarli Circle of Kurung-kumey district, Arunachal Pradesh, India.Indian Pediatr. 2009;46:1017–20
- Sarkar J, Murhekar MV, Shah NK, van Hutin Y. Risk factors for malaria deaths in Jalpaiguri district, West Bengal, India: evidence for further action. Malar J. 2009; 8:133
- Bhunia R, Hutin Y, Ramakrishnan R, Pal N, Sen T, Murhekar M. A typhoid fever outbreak in a slum of South Dumdum municipality, West Bengal, India, 2007: evidence for foodborne and waterborne transmission. BMC Public Health. 2009; 9:115
- Sharma PK, Ramakrishnan R, Hutin Y, Manickam P, Gupte MD. Risk factors for typhoid in Darjeeling, West Bengal, India: evidence for practical action. Trop Med Int Health. 2009;14:696–702. Epub 2009 Apr 20
- Ray TK, Hutin YJ, Murhekar MV. Cutaneous anthrax, West Bengal, India, 2007.Emerg Infect Dis. 2009;15:497–9
- Murhekar MV, Bitragunta S, Hutin Y, Ckakravarty A, Sharma HJ, Gupte MD. Immunization coverage and immunity to diphtheria and tetanus among children in Hyderabad, India. J Infect. 2009;58:191–6
- Sailaja B, Murhekar MV, Hutin YJ, Kuruva S, Murthy SP, Reddy KS, Rao GM, Gupte MD. Outbreak of waterborne hepatitis E in Hyderabad, India, 2005. Epidemiol Infect. 2009;137:234–40
- Sharma PK, Ramakrishnan R, Hutin YJ, Barui AK, Manickam P, Kakkar M, Mittal V, Gupte MD. Scrub typhus in Darjeeling, India: opportunities for simple, practical prevention measures. Trans R Soc Trop Med Hyg. 2009;103:1153–8
- DAS A, Manickam P, Hutin Y, Pattanaik B, Pal BB, Chhotray GP, Kar SK, Gupte MD. Two sequential outbreaks in two villages illustrate the various modes of transmission of cholera. Epidemiol Infect. 2009;137:906–12

- Saha S, Ramachandran R, Hutin YJ, Gupte MD. Visceral leishmaniasis is preventable in a highly endemic village in West Bengal, India. Trans R Soc Trop Med Hyg. 2009;103:737–4
- Sharma PK, Ramakrishnan R, Hutin YJ, Gupte MD.Increasing incidence of malaria in Kurseong, Darjeeling District, West Bengal, India, 2000-2004. Trans R Soc Trop Med Hyg. 2009;103: 691–7

Jordan FETP

Presentations

First East Mediterranean Public Health Network (EMPHNET)/3rd Regional TEPHINET Conference

- Al-Zein K. Epidemiological features of gastroenteritis attributable to rotavirus in hospitalized children less than 5 years old in selected hospitals in Jordan, 2007–2009 (Oral)
- Kanani K. Efficacy of prophylaxis of malaria and prevention of relapses among military forces after peace mission in endemic area (Oral)
- Abdulla B. Epidemiology and control of novel influenza A (H1N1) in Jordan: the first 30 cases (Oral)
- Sharkas G. Epidemiology of animal bites in Zarqa, Jordan, 2007 (Oral)
- Al-Rifai R. Avian influenza virus H9 subtype in poultry flocks in Jordan, 2008 (Oral)
- Iblan I. Hypertension and frequent mental distress among Jordanian adults, 2007 (Oral)
- Al-Rifai R. Evaluation for animal bite cases received and treated by Irbid Health Directorate, 2008 (Poster)
- Sabri N. Hospital admission among Jordanian adults (Poster)
- Al-Nsour M. Colorectal cancer in Jordan: results from the population-based cancer registry (Poster)
- Al-Jazazi S. Assessment of health status of children under five years old, Salt city, December 2007 (Poster)

Kenya FELTP

Presentations

5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009

- Ian Njeru. Cholera outbreak investigation in Moyale District, 2009 (Oral)
- Davies Kimanga. Factors associated with typhoid fever outbreak in rural district Kenya, 2008 (Oral)
- Otipo Shikanga. High mortality in a cholera outbreak in western Kenya, 2008 (Oral)
- Leonard Nderiru. Molecular epidemiology for Rift Valley fever virus during the east African outbreak, Kenya, 2006–2007 (Oral)
- Agneta Mbithi. Importation and circulation of wild polio virus, Kenya, 2009 (Oral)
- Eric Osoro. Evaluation of road traffic injuries surveillance, 2005–2006 (Oral)
- Robert Gatata. Establishing reference interval for CD4 and CD8 T lymphocyte in HIV negatives adults in Kenya, 2008 (Oral)
- Maurice Ope. Case-control study of risk factors for severe influenza among persons aged 5 years or more in a rural community, Bondo district, Kenya, 2007–2009 (Oral)
- Tabu Wabomba. Evaluation of a cholera surveillance in Kisumu, Nyanza, 2008 (Poster)
- Doris Arok. An outbreak of cholera in Terereka county, South Sudan, 2008 (Poster)
- Agneta Mbithi. Diarrhea outbreak in Mandera District, Kenya, 2008 (Poster)
- Colin Tabu. Knowledge and practice in cholera management among health workers in a cholera treatment centre (Poster)
- Nicollas Pole. Cholera outbreak investigation in Rachuonyo, Nyando and Kisumu Districts, 2008 (Poster)
- Kelly Nelima. Evaluation of animal bite surveillance in Kakamega District, Kenya, 2008–2009 (Poster)
- Ruth Nyasikera. Heamophilus influenza type B pediatric bacterial meningitis sentinel surveillance system evaluation, Kenya (Poster)
- James Njeru. Hypertension in HIV positive patients: burden and risk associated factors in a district hospital, Kenya, 2008 (Poster)
- Agneta Mbithi. Factors associated with adherence to treatment during post election violence

among HIV-positive patients, Kenya (Poster)
- Davies Kimanga. Status disclosure among adults living with HIV at Kilifi District hospital, Kenya, 2008 (Poster)
- Herman Weyenga. Evaluation of the national multi-drug resistant TB surveillance system, Kenya, 2007 (Poster)
- Pinyi Mawein. Risk factors associated with onchocercasis in western Bahr Ghazal state, Southern Sudan, 2008 (Poster)
- Pinyi Mawein. Investigation of a suspected case of viral hemorrhagic fever at Juba teaching hospital, Southern Sudan, 2008 (Poster)
- Richard Lako. Study on KAP for human trypanosomiasis in Lui hospital, Western Equatoria state of Southern Sudan, 2009 (Poster)

Publications
- Collin Tabu. Introduction and transmission of 2009 pandemic influenza A (H1N1) virus, Kenya, June–July 2009. MMWR, October 23, 2009, Vol. 58, No. 41
- O-tipo Shikanga et al. High mortality in a cholera outbreak in Western Kenya after post-election violence in 2008. Am. J. Trop. Med. Hyg., 81(6), 2009, 1085–1090.

Nigeria FELTP

Presentations
58th Epidemic Intelligence Service Conference, Atlanta, USA, April 2009
Aisha Abubakar. Outbreak of acute renal failure in children, Nigeria, December 2008 (Poster)

5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009
- Alabi Olaniran. Profile of dog bite victims in Plateau State, Nigeria: A Review (Oral)
- Biya Oladayo. TB surveillance system evaluation in Nigeria, 2009 (Poster)
- Biya Oladayo. Assessment of a public health laboratory for epidemic preparedness in Nasarawa State, Nigeria, 2009 (Oral)
- Badaru Sikiru. Acute Renal Failure outbreak in children under-five, Lagos, Nigeria, 2008–2009 (Oral)
- Emmanuel Awosanya. Evaluation of participatory disease surveillance in Nigeria, 2009 (Poster) Emmanuel Awosanya. Seat belt usage in the Federal Capital Territory, Abuja, Nigeria, November 2008 (Poster)
- Endie Waziri. Highly pathogenic avian influenza epidemic in Nigeria, 2006–2008 (Poster)
- Endie Waziri Live bird market surveillance evaluation for highly pathogenic avian influenza in Nigeria (Poster)
- Tolough Geoffrey. A review of TB/HIV co-infection in Zaria, Nigeria, 2007 (Poster)
- Gidado Saheed. Poliomyelitis in Nigeria: the trend and burden, 2000–2008 (Oral)
- Gidado Saheed. Evaluation of Acute Flaccid Paralysis Surveillance system in Nigeria, January–April 2009 (Poster)
- Halimatu Ayanleke. Lassa fever outbreak investigation in the Federal Capital Territory, Nigeria, January–March 2009 (Poster)
- Kurmi Garba. Evaluation of integrated biological and behavioral surveillance system in Nigeria, 2009 (Poster)
- Mohammed Adamu Kida. Cerebrospinal meningitis outbreak, Katsina State, Nigeria, 2009 (Oral)
- Moses Akhimien. Analysis of the effectiveness of the Nigeria Integrated Disease Surveillance and Response Strategy (Poster)
- Suleiman Haladu. Evaluation of wild bird surveillance system for highly pathogenic avian influenza, Nigeria, 2009 (Oral)

Publication
Abubakar A., et al. Fatal poisoning among young children from diethylene glycol-contaminated acetaminophen, Nigeria, 2008–2009. *MMWR*. December 11, 2009, Vol. 58, No. 48

Pakistan FELTP

Presentations

Seventh Jordanian Public Health Association Conference and the Third TEPHINET Regional Scientific Conference, 19–22 October 2009, Amman, Jordan

- Muhammad Safdar. Alerts/outbreaks experience of epidemic investigation cell, NIH, Pakistan, 2006–2008 (Oral)
- Tabassum Mahmood. Fatality rate and risk factors for fatal road traffic accidents in Islamabad-Lahore Motorway, Pakistan. A nested case control study (Oral)
- Akbar Ali Ghanghro. Evaluation of hepatitis surveillance in Naushehru Feroz District of Sindh (Oral)
- Nadeem Ikram. Evaluation of HIV/AIDS surveillance system(s) in Pakistan, 2009 (Oral)
- Rana Imtiaz Ahmed. Evaluation of malaria surveillance system in Pakpattan, Punjab, Pakistan (Oral)
- Pardeep Kumar. Dengue fever outbreak investigation in Basal, Attock, Punjab, Pakistan (Oral)
- Rab Nawaz. Outbreak investigation of acute diarrhea, April–May 2009, Taru Jabba District Nowshera, NWFP, Pakistan (Oral)
- Nighat Murad. Outbreak of Vibrio Cholera ElTor 01 Ogawa in Taru Jabba District Nowshera, NWFP, Pakistan, August 2008 (Oral)
- Ansari JA. Prevalence of diarrheal diseases in children under 5 years of age in Murree, Pakistan, 2008 (Oral)
- Tabassum Mehmood. Evaluation of the road traffic injuries surveillance in District Rawalpindi, January 2008 (Oral)
- Muhammad Abass. Evaluation of TB surveillance system in District Pakpattan, Punjab, Pakistan, November 2007 (Oral)
- Mohammad Younus. Evaluation of TB surveillance in District Okara, January 2009 (Poster)
- Niaz Ali Khan. Acute respiratory infections surveillance among children <5 years, District Bakkhar, Punjab, 2009 (Poster)
- Rab Nawaz. Evaluation of HIV/AIDS surveillance system in NWFP, Pakistan, November 2008 (Poster)
- Wazir Akbar. Evaluation of malaria surveillance system in District Peshawar and Khyber Agency, NWFP, Pakistan, October 2007 (Poster)
- Pardeep Kumar. Evaluation of measles surveillance system in District Attock, Punjab, Pakistan, 2008 (Poster)
- Muhammad Dawood Kasi. Evaluation of measles surveillance system in District Quetta, January 2009 (Poster)
- Muhammad Moosa. Evaluation of TB-DOTS surveillance program in District Kashmore, Sindh (Poster)
- Aslam Pervaiz. Evaluation of TB surveillance in Punjab prisons, Pakistan (Poster)
- Wazir Akbar. Outbreak of cholera in Pabbi and Azakhel, District Nowshera, NWFP, Pakistan, August 2008 (Poster)

5th TEPHINET Southeast Asia and Western Pacific Bi-Regional Scientific Conference, Seoul, South Korea, 2–6 November 2009

- Aslam Pervaiz. Seroprevalence of HIV, hepatitis, and syphilis among prisoner blood donors from Punjab prisoners, January 2009 (Oral)
- Mohammad Moosa. Outbreak investigation of acute watery diarrhea in village Mevo Bhutto, District Kashmore, Sindh, September–October 2008 (Poster)
- Akbar Ali Ghanghro. Epidemiological investigation of an outbreak of hepatitis B and C in rural areas of Sindh (Poster)

South Africa FELTP

Presentations

5th African Regional TEPHINET and 3rd AFENET Scientific Conference, Mombasa, Kenya, September 2009

- Malotle MM, Moshime M. Cholera outbreak in Tshwane District, Gauteng Province, South Africa,

November 2008–April 2009 (Oral)

- Motladiile TW, et al. Trends and characteristics of TB in Rustenburg, North West Province, South Africa, 2008 (Oral)
- Nteo DM, Harris BH, Bothman L, Maimane F. Analysis of measles surveillance data, South Africa, 2003–2007 (Oral)
- Ntshoe GM, McAnerney J, Ndugulile F. The viral watch influenza surveillance programme in South Africa: its attributes and influenza patterns, 2005–2008 (Oral)
- Sawadogo B, Tiendrebeogo S, Badolo O, Ouedraogo L. Investigation of measles outbreak in the East Health Region of Burkina Faso, Ouagadougou, 20–26 April 2009 (Oral)
- Velen K, Khin San Tint, Van Rooyen E. Extensively drug-resistant TB burden of disease, retrospective data review at Jose Pearson Hospital, Port Elizabeth, January–March 2009 (Oral)
- Archer BN, Keddy KH, De Jong GM, Cohen C, Harris BN. Epidemiology of typhoid fever in South Africa, 2003–2007 (Poster)
- Cele LP, Khin San Tint, Cooper L. Malaria surveillance data analysis (2003–2007), KwaZulu-Natal, South Africa (Poster)
- Cele LP, Khin San Tint, Khoza C. HIV and syphilis antenatal seroprevalence survey, Kwa-Zulu Natal, South Africa, 2007 (Poster)
- Huma M, Khosa E, van der Gryp R. Hepatitis A outbreak in a primary school, Claremont-Tshwane, Gauteng Province, March–October 2008 (Poster)
- Jacobs CA, et al. Evaluation of the public health response to an isolated diphtheria death in Cape Town, South Africa, 2008 (Poster)
- Jacobs CA, Harris BN, Cameron NA. Risk factors for diarrhoea in young children in Delft, Cape Town, South Africa, 2008: a case-control study (Poster)
- Khajoane RA, Harris BN, Louwagie. Hypertension: prevalence, awareness, treatment, and control among adults in Thaba Nchu town, Free State Province, South Africa, 2008 (Poster)
- Khajoane RA, Khin San Tint. Termination of pregnancy surveillance, Free State Province, South Africa, 1999–2007 (Poster)
- Landoh DE, Hounton S, Nassoury D, Bakoussa D. Evaluation of a community based surveillance of malaria in the district of Est-Mono, Togo, August–December 2008 (Poster)
- Malotle MM, Maimane F. Acute flaccid paralysis surveillance, South Africa, 2008 (Poster)
- Modise MP, Khin San Tint, Harris BN. Evaluation of TB surveillance, Motheo District, Free State Province, South Africa, 2007 (Poster)
- Modise MP, Khin San Tint. Trends and characteristics of TB in Thaba Nchu, Free State Province, South Africa, 2002–2006 (Poster)
- Motladiile TW, et al. Trends and characteristics of cholera during an outbreak in Limpopo Province, South Africa, 15 November 2008–01 February 2009 (Poster)
- Nteo MD, Harris BN, Bothman L, Maimane F. Evaluation of a measles surveillance system in Tshwane Metro, Gauteng Province, 1 January 2007–31 December 2007 (Poster)
- Ntlebi VM. Descriptive patterns of patients attending ART treatment in the Northern Cape, South Africa, 2004–2007 (Poster)
- Sigudu TT, Mabuza A, Kok G, Mahlalela T, Ngomane L. Evaluation of the malaria case surveillance system, 1997–2007, Ehlanzeni District, Mpumalanga (South Africa) (Poster)
- Sigudu TT, Zwane M, Zulu T, Dladla S, Nkambule T. Gastroenteritis outbreak following a school athletics lunch, Fernie 2, Mpumalanga, 2009 (Poster)
- Tumbo J, et al. Antenatal care and delivery service utilisation in a rural area, North West Province, South Africa, 2008 (Poster)
- Velen K, et al. A Cluster of infant deaths in Graaff-Reinet Town, South Africa, 2008 (Poster)
- Vellema SC, Zondo P. Cholera outbreak in Sheba Mine, Ehlanzeni District, Mpumalanga, South Africa, 29 May–22 July 2008 (Poster)

5th TEPHINET Southeast Asia and Western Pacific Bi-Regional Scientific Conference, Seoul, South Korea, 2–6 November 2009

Velen K, Khin San Tint, Van Rooyen E. Extensively drug-resistant TB burden of disease, retrospective data review at Jose Pearson Hospital, Port Elizabeth, January–March 2009 (Oral)

58th Epidemic Intelligence Service Conference, Atlanta, USA, April 2009
Ntshoe GM, Malaza AL, Prentice E, Khin San Tint, Ndugulile F. Diarrheal disease outbreak during a school white water rafting trip, Zambezi River, Zimbabwe, August 2008

15th Maternal and Child Epidemiology Conference, Tampa Bay, Florida, 9–11 December 2009
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5 orals, 4 posters

58th Epidemic Intelligence Service Conference, Atlanta, USA, April 2009
1 poster

ESCAIDE Conference, Stockholm Sweden, October 2009
2 orals, 2 posters

Frequently Used Acronyms

AFENET	African Field Epidemiology Network
AIZIP	Avian Influenza and other Zoonotic Infections Project
BRFSS	Behavioral Risk Factors Surveillance System
CDC	Centers for Disease Control and Prevention
DTRA	U.S. Defense Threat Reduction Agency
DDM	Data for Decision Making
DHMT	District Health Management Team
DLS	Division of Laboratory Systems
EDP	Especially Dangerous Pathogen
EID	International Emerging Infectious Diseases
EIS	Epidemic Intelligence Service
FETP	Field Epidemiology Training Program
FELTP	Field Epidemiology and Laboratory Training Program
GAP	Global AIDS Program
GDD	Global Disease Detection
GOSS	Government of South Sudan
ICMR	Indian Council for Medical Research
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
LSI	Leadership in Strategic Information
MBDS	Mekong Basin Disease Surveillance
MIPH	Management for International Public Health
MOH	Ministry of Health
MOU	Memorandum of Understanding
MPH	Master of Public Health
NACC	National AIDS Control Commission
NCDC	National Center for Disease Control
NCIRD	National Center for Immunization and Respiratory Diseases
NCHHSTP	National Center for HIV, Viral Hepatitis, STD, and TB Prevention
NCZVED	National Center for Zoonotic, Vector-Borne, and Enteric Diseases
NEDSS	National Egyptian Disease Surveillance System
NGO	Non-governmental Organization
NICD	National Institute for Communicable Diseases
NIE	National Institute of Epidemiology
NMCP	National Malaria Control Program
NTP	National TB Programme
NURSPH	National University of Rwanda School of Public Health
PEPFAR	President's Emergency Plan for AIDS Relief
TB	Tuberculosis
SMDP	Sustainable Management Development Program
TEPHINET	Training Programs in Epidemiology and Public Health Interventions Network
USAID	U.S. Agency for International Development
WHO	World Health Organization
WHO AFRO	WHO Regional Office for Africa
WHO SEARO	WHO South East Asia Regional Office